



Appendix 1: Building knowledge about teaching and learning

One aim of the TLRI is to build *cumulative* knowledge about teaching and learning. Commonly, proposers do this by clearly linking their proposal to the national and international literature in the field and by making a case for the usefulness of an investigation into a selected area. In addition, proposers are encouraged to explicitly build on completed TLRI projects and other relevant initiatives. To support project teams, the following information is provided:

1. Brief summaries about the completed and 'in progress' TLRI projects to date, for each sector, are provided in this appendix. Further information about each project can be found on the TLRI website.
2. The TLRI has reviewed its contribution to building knowledge about teaching and learning by undertaking three reviews: one examining work completed in the early childhood sector, one in the tertiary, and a final one in the school sector. While they are sector specific they all provide insights that will be helpful to project teams regardless of their proposed area of study.

The papers commissioned by the TLRI as part of the project designed to examine the contribution the TLRI has made to building knowledge about teaching and learning can be found at:

- **Early childhood review:** [Joce Nuttall 2010](#) and [Anne Meade 2010](#)
- **The tertiary sector review:** [Zepke and Leach 2011](#) and a response to this paper from Ako Aotearoa can be located at: [Ako Aotearoa response](#)
- **The school sector review:** [Hill and Cowie 2012](#). Responses to this paper by Susan Sandretto, University of Otago focusing on primary schooling, and from Rosemary Hipkins, NZCER focusing on secondary schooling, can be found by clicking on these links: [Sandretto 2012](#) and [Hipkins 2012](#).

In each case a one-day symposium was held to discuss the papers and to identify future priorities for the TLRI. Summaries were then written to capture the key ideas raised in these meetings.

The summaries of the discussions held about research into teaching and learning in the early years, tertiary, and school sectors can be accessed through these links:

- [TLRI Early Years symposium](#)
- [TLRI Tertiary symposium](#)
- [TLRI School Sector symposium](#)

3. The TLRI Project Plus series synthesises findings and draws lessons from across a number of TLRI projects. The first in the series is called *Doing research that matters: A success story from statistics education*. This was written by NZCER chief researcher Rosemary Hipkins.

[Doing research that matters](#).

The second in the series is called *Literacy research that matters: A review of the school sector and ECE literacy projects*, by NZCER senior researcher Sue McDowall.

[McDowall 2015](#)

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Early childhood sector

Completed projects

1. [Under-three-year-olds in kindergarten: Children's experiences and teachers' practices](#)

Funding: 2 years (2004–2005)

Research team

Judith Duncan, Children's Issues Centre, University of Otago, with Carmen Dalli, Institute of Early Childhood Studies, Victoria University of Wellington.

Brief description

This project investigated the experiences of under-3-year-olds and teachers' practices in New Zealand kindergartens. Historically, kindergartens have provided an early childhood environment for 3–5-year-olds. As enrolments and waiting lists have dropped, kindergartens have opened their door to children under three years of age, taking them into an environment that was often structured for older children in a larger group setting. We worked alongside kindergarten teachers to explore the impact of this change on 2-year olds' learning experiences, and on teachers' practices generally. Together we identified factors that supported best practices for 2-year-olds, and macro-level factors that influence teachers' ability to provide positive learning experiences for children.

2. [Whakawhanaungatanga—partnerships in bicultural development in early childhood care and education](#)

Funding: 2 years (2006–2007)

Research team

Jenny Ritchie and **Cheryl Rau**, University of Waikato.

Brief description

This project built on theoretical and methodological foundations established in a doctoral research project completed by Jenny Ritchie (2002). Collaborative partnerships between teacher educators, professional development providers, and early childhood educators, were used to identify effective strategies for building and strengthening relationships between early childhood educators and whānau/hapū/iwi Māori within early childhood care and education settings. The research was premised on findings of Ritchie (2002): that strengthening provision of the bicultural aspirations of the early childhood curriculum, Te Whāriki (Ministry of Education, 1996b), within mainstream early childhood education and care settings is a central professional responsibility for educators; and that a key strategy for achieving this objective is for educators to build relationships with the whānau Māori of children in their settings (whakawhanaungatanga). This greater participation by whānau Māori in mainstream early childhood settings is facilitated through educator attitudes that maintain a climate and environment that are respectful and reflect Te Reo me ōna Tikanga.

3. Enhancing mathematics teaching and learning in early childhood settings

Funding: 2 years (2005–2006)

Research team

Maggie Haynes, Carol Cardno, and Janita Craw, School of Education, Unitec, with Avondale Kindergarten, Birdwood Kindergarten, and Don Buck Kindergarten.

Brief description

Researchers such as Carr, Peters, and Young-Loveridge (1994); Young-Loveridge, Carr, and Peters (1995); and Wylie (2001) have for some time now highlighted how children’s mathematical competencies in the early years impact on children’s successes in mathematics in the school years. However, there has been little documented on mathematical learning and teaching in the early childhood sector from the perspective of the *teacher*, and particularly within Aotearoa New Zealand. Consequently, areas that this study explores include:

- how mathematics teaching and learning is conceptualised in early childhood settings
 - teachers’ attitudes to providing learning experiences that support and extend mathematical learning
 - what helps and hinders effective teaching and learning of mathematics
 - what can be done to improve practices that enhance mathematical learning outcomes for children.
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4. Training on the job—how do home-based co-ordinators support carers to notice, recognise, and respond?

Funding: 1 year (2007)

Research team

Tracey Hooker, Frances Bleaken, and Sue Bigger, Hamilton Childcare Services Trust, and Sally Peters, University of Waikato.

Brief description

This project focused on exploring the impact of the informal training and professional development that co-ordinators provide for home-based educators in an early childhood service. The research provided insights into the ways in which co-ordinators provide informal training and professional development for educators to enable them to notice, recognise, and respond to children’s learning. The data suggest that through providing this informal training co-ordinators are able to support quality outcomes for children.

5. Key learning competencies across place and time

Funding: 3 years (2005–2007)

Research team

Margaret Carr, Wilf Malcolm Centre for Educational Research, University of Waikato, with Sally Peters, University of Waikato; teacher-researchers from three schools and three early childhood centres in Rotorua and Christchurch; and associated co-ordinators.

Brief description

Research in three primary schools and two early childhood centres in Aotearoa New Zealand investigated questions about: what children do when they are apparently managing self, relating to others, participating and contributing, thinking, and using language, symbols and texts; what teachers do to enhance learning in these areas; and how continuity is interpreted and documented. The research developed artefacts or “tools of travel” that may be useful for teachers as they work with key competencies and learning dispositions.

6. Te Puawaitanga—partnerships with tamariki and whānau in bicultural early childhood care and education

Funding: 2 years (2006–2007)

Research team

Jenny Ritchie, School of Education, Unitec, with Cheryl Rau, University of Waikato; the Thames/Coromandel Playcentre Association; and teachers from kindergartens in the Tauranga area.

Brief description

This project aimed to document the narratives of a diverse group of children and families as they engaged with early childhood services that are committed to honouring the bicultural intent of the early childhood curriculum document *Te Whāriki*. One of the key insights gained from this project was the deepened understanding and empathy generated by the teachers, when they made the time to sit and talk responsively with parents and other relatives of children in their centres.

7. Home-based early childhood education (family day care): The visiting teachers' role in improving educators' practices

Funding: 2 years (2007–2008)

Research team

Judith Duncan, Children's Issues Centre, University of Otago, with the Dunedin Community Childcare Association, and its director Mrs Pat Irvine; the visiting teachers; and the Children's Issues Centre, University of Otago.

Brief description

This project investigated the role of Visiting Teachers (formerly called coordinators) in improving the quality of Educators' practices, and children's learning outcomes, in the homebased settings supervised by the Dunedin Community Childcare Association (DCCA). The project identified three main factors that influenced the practice of the Visiting Teachers and matched those of the Educators: informality, intentionality and isolation. The three 'I's became both the process of our research and the final conclusions. Addressing these factors within the Visiting Teacher and Educator settings and pedagogy directly impacted on the learning experiences for the children, the Educators and the Visiting Teachers.

8. Titiro Whakamuri, Hoki Whakamua: We are the future, the present, and the past: Caring for self, others, and the environment in early years' teaching and learning

Funding: 2 years (2008–2009)

Research team

Jenny Ritchie, Early Childhood Teacher Education, School of Education, Te Wānanga o Wairaka, Unitec, with Unitec and kuia, kaumātua, a research facilitator, and a teacher from the Dunedin Kindergarten Association, together with nine kindergartens from throughout New Zealand.

Brief description

This study focused on global issues of ecological sustainability in a variety of local early childhood education contexts, drawing from both kaupapa Māori and Western perspectives. Ecological sustainability as a teaching and learning issue (Gruenewald, 2003) was, within this project, philosophically grounded in an ethic of care (Martin, 2007; Noddings, 2005) and an ethics of place (Smith, 2001), with a particular focus on respect for Papatūānuku, the Earth Mother (Marsden, 2003). The teachers, tamariki and whānau of 10 early childhood centres from across Aotearoa New Zealand participated in the project.

9. Learning wisdom

Funding: 2 years (2008–2009)

Research team

Margaret Carr, Wendy Lee

Brief description

This project aimed to explore the ways in which young children could become more wise about their learning journeys, and perhaps the learning journeys of others. It explored how four-year-olds could develop some understandings about what they were learning and why it might have been valuable and the revisiting of episodes of learning as a location for the research. Key findings included identifying five teaching-and-learning domains of wisdom in education: kindness, dialogue, resourcefulness, expertise and flow, which were characterised by an implicit or explicit balancing of goals and interests. We found that a range of deliberate teacher strategies can provide opportunities for the engagement of children in revisiting their learning in order to encourage ‘an openness to experience, and a capacity to reflect on experience and to make sense of it’.

10. Strengthening responsive and reciprocal relationships in a Whānau Tangata centre: An action research project

Funding: 2 years (2007–2008)

Research team

Jeanette Clarkin Phillips, Wilf Malcolm Institute of Educational Research, University of Waikato, with Margaret Carr, University of Waikato; teachers from Taitoko Kindergarten, Levin; and the Wellington Region Free Kindergarten.

Brief description

This project’s aim was to investigate the teaching and learning at Taitoko Kindergarten in the light of the impact of the development of a Whānau Tangata centre. Through action research, the team addressed the teachers’ questions associated with teaching and learning as they implement changes in response to establishing a Whānau Tangata centre at the kindergarten as part of a Parent Support and Development Contract.

11. What’s special about teaching and learning in the first years? Investigating the “what, hows and whys” of relational pedagogy with infants and toddlers

Funding: 2 years (2009–2010)

Research team

Carmen Dalli, Institute for Early Childhood Studies, Jessie Hetherington Centre for Educational Research, Victoria University of Wellington, with University of Auckland, AUT University, Auckland, and a variety of urban early childhood centres in Auckland and Wellington.

Brief description

The historical emphasis on young children receiving care rather than education means that understanding infants and toddlers as learners can be challenging for many teachers. Using case study methodology, this collaborative two-year project investigated infants’ and toddlers’ opportunities for learning; how teachers construct children as learners; how teachers’ constructions influence their pedagogy; and how learning opportunities may be strengthened.

12. Moments of wonder, everyday events: Children's working theories in action

Funding: 2 years (2009–2010)

Research team

Keryn Davis and **Sally Peters** from the University of Canterbury and the University of Waikato, with the Canterbury Playcentre Association.

Brief description

The focus of this research was on exploring children's working theories in action; how they are expressed and how working theories are understood and fostered in Playcentre environments. This project considered the features of environments that encourage children to theorise and make sense of their worlds.

13. Our place: Being curious at Te Papa

Funding: 2 years (2010–2011)

Research team

Jeanette Clarkin-Phillips, **Margaret Carr**, and **Vanessa Paki**, the University of Waikato, with Wellington Region Free Kindergarten Association and Te Papa.

Brief description

This project was sited in a kindergarten, Tai Tamariki, at the Museum of New Zealand Te Papa Tongarewa in Wellington and looked at how children made meaning of what they encountered and experienced at the museum, and what opportunities strengthened this learning.

14. Active adult participation in ECE: Enhancing child learning and community wellness

Funding: 2 years (2010–2011)

Research team

Judith Duncan, and **Sarah Te One**, with University of Canterbury, Victoria University of Wellington, and Whanganui Central Baptist Kindergarten and Creche Trust.

Brief description

This project investigated reconceptualising early childhood centres as places for adult participation and active teacher-whānau partnership for positive holistic outcomes for children and their whānau within the community.

15. Pedagogical intersubjectivity: Teaching and learning conversations between children and teachers

Funding: 1 year (2012)

Research team

Amanda Bateman, University of Waikato, with Campus crèche, Hamilton.

Brief description

This project builds on prior national TLRI research investigating teaching and learning episodes between teachers and children during their everyday interactions (Carr et al., 2008; Davis & Peters, 2008). These prior studies indicated that teachers sometimes found it difficult to:

1. choose which of the children's interactions they should involve themselves in to develop opportunities for children's learning (Carr, 2007; Davis & Peters, 2008)
2. interact with children in ways that avoid "hijacking" their developing working theories (Davis & Peters, 2008).

With these prior studies as a foundation, the current project aimed to investigate teacher–child interactions with a specific focus on analysing everyday verbal and non-verbal communications between teachers and children. The main aim of this project was to reveal how everyday moments of teaching and learning were co-produced by teachers and children.

16. Children as teachers, families as learners

Funding: 2 years (2012–2013)

Research team

Margaret Carr and **Jeanette Clarkin-Phillips**, University of Waikato, with Tai Tamariki Kindergarten and the kindergarten community and Wellington Region Free Kindergarten Association.

Brief description

This project is about young children as museum guides explaining their understandings about a museum exhibit or object to teachers, family, and friends. The research explored ways in which these shared experiences invited conversations that include families' social and cultural knowledge, engage families in their children's learning, and influence family expectations and aspirations for their children.

17. Move, act, play and sing (MAPS): Exploring early childhood arts teaching and learning strategies and concepts through community performing arts interventions in Reggio Emilia centres

Funding: 2 years (2012–2013)

Research team

David Lines, University of Auckland and Chris Naughton New Zealand Tertiary College, with Helensville Montessori Early Childhood Centre, St. Andrews Epsom Early Childhood Centre, and Awhi Whānau, Otago.

Brief description

This project explored early childhood teaching and learning in the performing arts through community artist interventions and relational practices and pedagogies. The research developed three early childhood centre case studies where teachers, children, and parents worked together with community artists, the research team, and other colleagues to explore emergent pathways of performing arts teaching and learning. In MAPS, community artists in music, dance, and drama worked alongside teachers and children in semi-planned, open, and improvisatory pedagogical settings set up to explore the potentialities of performing arts learning and teacher responses in the centre environments and communities. The ethnographic inquiry focused on how the early childhood teachers engaged in meaningful performing arts experiences through the research process and looked at ways in which centres could engage in sustainable, ongoing performing arts teaching and learning.

18. Inquiring minds, meaningful responses: Children's interests, inquiries and working theories

Funding: 2 years (2012–2013)

Research team

Helen Hedges and **Maria Cooper**, University of Auckland, with Myers Park KiNZ and Small Kauri Early Education Centre, Mangere Bridge.

Brief description

In this project the researchers worked in a partnership with teachers from two centres to explore and theorise understandings of children's inquiries and working theories. It investigated how teachers noticed, responded to, recorded, and revisited the interests, inquiries, and working theories of infants, toddlers, and young children in early childhood education.

19. Supporting learning in the early years for children who learn in more than one language: Developing deeper understandings for practice

Funding: 3 years (2013–2015)

Research team

Val Podmore, Helen Hedges, Diane Mara, Peter Keegan, Nola Harvey, Jenny Lee, and Patisepa Tuafuti.

Brief description

This research explored the languages used, and the experiences and learning outcomes of children who learn in more than one language in the early years. The findings emphasise the need for teachers to extend their understanding of children's diverse learning experiences in their homes, families, communities, and cultures, as well as the capability of young children to learn effectively in more than one language when this is adequately resourced.

Early childhood sector

In progress (continuing or at final editing stage)

[20. Te Kura Mai i Tawhiti: He Tau Kawekaweā: Building the foundation for whānau educational success and wellbeing; a Kaupapa Māori ECE approach](#)

Funding: 3 years (2014–2016)

Research team

Mihi Ratima and Erena Hond-Flavell, Te Kōpae Piripono practitioners Aroaro Tamati and Hinerangi Korewha, and kaupapa Māori researcher, Will Edwards.

Brief description

The aim of this research is to strengthen and build an evidence base around the effectiveness of an innovative kaupapa Māori early childhood centre's whānau development approach to teaching and learning aimed at promoting substantial positive outcomes for Māori learners that are sustained throughout their life course. In this study, a key focus will be the transformative power of a whānau development approach to early childhood education (ECE) in overcoming barriers to education and wellbeing for Māori whānau and the associated long-term maintenance and cumulative benefit of such.

[21. Nurturing and encouraging young children's identity, language and culture in the early years](#)

Funding: 2 years (2015–2016)

Research team

Keryn Davis, Ruta McKenzie, Mapusaga Aoga Amata; North Beach Community Childcare Centre.

Brief description

This project focuses on understanding how young children express their working theories about identity, language, and culture. The project will also explore how adults nurture and encourage this learning, and how this in turn impacts on participation in early childhood education communities. The project examines ways teachers can support diversity, and participation, through pedagogy and programme design that is highly responsive to all learners.

[22. Te Whatu Kete Matauranga: Weaving Māori and Pasifika infant and toddler theory and practice in early childhood education](#)

Funding: 2 years (2015–2016)

Research team

Lesley Rameka, Ali Glasgow, three Te Wānanga o Aotearoa Early Learning Centres, three EFKS A'oga Amata.

Brief description

This project will create new knowledge about teaching and learning by exploring Māori and Pasifika understandings of care and education for infants and toddlers. We will utilise this culturally grounded rationality as the basis for theoretical statements that include theory development and culturally-embedded practice in Māori and Pasifika early childhood services. Lastly, we will use the findings from our work with Māori and Pasifika services to create culturally responsive theoretical statements which include theory and practices recommendations for mainstream services. The project will therefore not only support culturally-embedded infant and toddler provision in Māori and Pasifika early childhood services, but will provide culturally relevant theory and practice for all early childhood teachers and services.

23. Supporting Teaching and Learning in Home-Based Early Childhood Education

Funding: 2 years (2017--2018)

Research team

Elizabeth Schaughency and Elaine Reese, Dione Healey and Jane Carroll

Brief description

This project will support educator practice to enhance children's learning via three practitioner-partner and research-informed professional learning modules to three networks of home-based educators (HBEs). Each module focuses on one aspect of developing competencies related to success in beginning schooling (specifically oral language and approaches to learning). Each network will engage as a learning community with each professional learning module. We will evaluate initial impacts of each learning module and their combined benefits for educators' practices and children's skills. Then we will follow HBEs and children to evaluate whether practice benefits are sustained and assess children's learning in beginning primary school.

24. Age-responsive pedagogies: 'Preschool' ECE teachers interrogate their dialogues with and about two-year-olds

Funding: 2 years (2017--2018)

Research Team

Jayne White, Bridgette Redder, Annette Sheehy, Vicky Wilson, Angela Taylor, Caroline Hjorth, Michelle Ruby, Sam Niederer, Beverly DeManser, Lannie Freed, Alisha Walker

Brief description

This project focuses on the pedagogical interactions that take place for two-year-olds in mixed-age early childhood education (ECE) settings that are traditionally oriented to 'preschool' (three- to four-year-olds). Researchers will work with teachers to slow down and scrutinise their practice by videoing, analysing and theorising their dialogues with and about two-year-olds as a central form of teaching and learning.

School sector

Completed projects

[25. Together is better? Primary students' and teachers' experiences of collaborative learning online](#)

Funding: 1 year (2005)

Research team

Pat Street, The South Learning Centre, with Christchurch East Primary School, Waltham Primary School, and Ultralab South.

Brief description

This project researches the use of an online learning environment to teach a collaborative unit involving three classes in two primary schools.

[26. Zeroing in on quality teaching: Reducing disparities by building teachers' capacities and capabilities with respect to integrative approaches to curriculum delivery](#)

Funding: 1 year (2005)

Research team

Christina Harwood, Massey University College of Education, with Opunake Primary School and Eltham Primary School.

Brief description

This project, a collaborative venture between two primary schools and Massey University, followed a year of intensive professional development in 2004 that had two aims: to improve learning outcomes for all students in the two schools, with a particular focus on the achievement of Māori students; and to develop communities of practice within and between the two schools to enable a proactive and sustained focus on improving learning. The involvement of teachers in the research project provided a means of checking progress, and provided forums to identify problems and ways to solve them, all central activities of the implementation of change (Hopkins, Ainscow, & West, 1994).

[27. Investigating responses to diversity in a secondary environment](#)

Funding: 1 year (2005)

Research team

Lindsey Conner, Christchurch College of Education, with Linwood College.

Brief description

This project examined how Linwood College is responding to the diversity of its students and provides some insights for future policies and practices for Linwood College and schooling in general.

28. A collaborative self-study into the development of critical literacy practices (Pilot Study)

Funding: 1 year (2005)

Research team

Susan Sandretto, University of Otago, with East Taieri Primary School and Port Chalmers School.

Brief description

This pilot project consisted of collaborative self-study research into the development of critical literacy practices within primary schools. Two teachers from each of two primary schools in the Dunedin area, with the assistance of the researchers, collaboratively investigated the development and implementation of an enhanced critical literacy focus within everyday guided-reading practices in their classrooms.

29. A collaborative self-study into the development of critical literacy practices

Funding: 2 years (2006–2007)

Research team

Susan Sandretto, Scott Klenner, and Andrew Straw, University of Otago, with Elsie Boyens, Gill Brown, Rosemary Coleman, Tony Graham, Lisa Hansen, Jo Harford, Peta Hill, Wendy Lamond, Phil Maw, Rae Parker, Garth Powell, Tui Qauqau, Clive Swale, Peter Thorn, Jennie Upton, and Jo Weggery.

Brief description

During 2006–7 four Dunedin primary schools and one secondary school, involving a total of 16 teachers, took part in the project. The participating teachers became familiar with the literature on the theory and practice of critical literacy, and developed, implemented, and evaluated critical literacy strategies in their regular classroom programmes.

30. Early algebraic thinking: Links to numeracy

Funding: 1 year (2006)

Research team

Chris Linsell, Dunedin College of Education, with John McGlashan College; King's High School; Otago Boys High School; and researcher Jan Savell, Numberworks.

Brief description

This project investigated the links between numeracy and readiness for learning algebra, and aimed to make explicit the knowledge and strategic thinking of students as they make the transition from arithmetic to algebra. A diagnostic interview, similar to that used in numeracy assessment, was developed. The results from this research may not only enhance students' learning of algebra in their own schools, but also inform mathematics educators who are extending the implementation of the Number Framework into high schools.

31. Teachers developing as researchers: Teachers investigate their use of questions in mathematics

Funding: 1 year (2006)

Research team

Linda Bonne, Redwood School and **Ruth Pritchard**, Victoria University of Wellington College of Education, with Seatoun School, Windley School, Rangikura School, Churton Park School, Te Aro School, and Redwood School.

Brief description

This project aimed firstly to develop the research capability of a group of teachers, and secondly to investigate their use of questioning to help students' mathematics learning. A group of teacher-researchers worked in partnership with the research team leaders to analyse their own practice and identify aspects of questioning behaviour, conditions that support effective use of questioning, and barriers that inhibit the use of certain types of questioning. By adding the "teacher's voice" to the existing body of research, the project developed a deeper understanding of teachers' unique perspectives of teaching and learning.

32. The Art of the Matter: The development and extension of ways of knowing in the arts

Funding: 2 years (2005–2006)

Research team

Deborah Fraser, University of Waikato, with the Wilf Malcom Institute of Educational Research, and teachers from six Waikato-based schools.

Brief description

The Art of the Matter project focused on learning and teaching in the Arts, and investigated how children develop their ideas and related skills in each of the Arts' disciplines (dance, drama, music, and visual art) in the primary school. It also scrutinised the nature of any "ritual patterns" (Efland, 2002; Nuthall, 2001) of teaching that support or constrain Arts education, and, by doing so, considered pedagogical processes that deepen children's experience and understanding in the Arts. As a major outcome, the project sought to further knowledge of how generalist teachers can enhance and extend children's learning in the Arts.

33. Conceptions of assessment and feedback in secondary school

Funding: 2 years (2005–2006)

Research team

Elizabeth Peterson and Earl Irving, The University of Auckland, with Pakuranga College, Papatoetoe High School, Tangaroa College, and Waitākere College.

Brief description

This project aimed to investigate ways of identifying secondary school students' and teachers' conceptions of assessment and feedback. It outlines the modification of one inventory (Students' Conceptions of Assessment) and the development of two new inventories (Conceptions of Feedback and Conceptions of Learning). We also outline the design of a series of classroom activities that teachers can use to identify students' conceptions of specific assessment and feedback practices. Finally this project documents the development of teachers as researchers, highlighting some of the benefits and some of the difficulties.

34. Investigating teachers' pedagogical approaches in environmental education that promote students' action competence

Funding: 1 year (2005)

Research team

Chris Eames, Centre for Science and Technology Education Research, University of Waikato, with Auckland University of Technology, Christchurch Polytechnic Institute of Technology, and Waikato Institute of Technology.

Brief description

This study investigates the pedagogical approaches in environmental education that teachers use which can promote students' action competence. The investigation was based around a series of case studies of New Zealand school classrooms where regional environmental education co-ordinators partner teachers to research classroom practice in environmental education. This study contributes to a better understanding of environmental education in New Zealand schools, informing principles not only of pedagogy but also student achievement.

35. Numeracy and practices and change

Funding: 2 years (2004–2005)

Research team

Glenda Anthony and **Margaret Walshaw**, Department of Technology, Science and Mathematics Education, Massey University.

Brief description

This project looked at issues to do with equity, proficiency, and sustainable practice as a result of recent numeracy reforms in the primary school sector. It was a collaborative venture between researchers, teachers, and students in 16 schools previously involved in the Numeracy Development Project. It offered schools and classroom teachers the opportunity to undertake a serious deliberation of the effects of their work following the reforms. We formed four projects to explore teacher knowledge, mathematical practices, the perspectives of the learner, and teacher change. We looked at the personal, school-wide and community capacities needed for changing teaching and learning—including a look at how students themselves viewed mathematics learning.

36. Mathematics enhancement project: Professional development research

Funding: 2 years (2004–2005)

Research team

Bill Barton and Hannah Bartholomew, Department of Mathematics, The University of Auckland, with 27 teacher-researchers and six university researchers.

Brief description

As part of a major research and development project in Manukau secondary schools, this project focused on the delivery of professional development to secondary mathematics teachers, and on the mathematics classroom as a learning environment, and set out to establish whether and how teacher research could form part of effective professional development.

37. Great expectations: Enhancing learning and strengthening teaching in primary schools with diverse student populations through action research

Funding: 2 years (2004–2005)

Research team

Mary Hill, School of Education, University of Waikato.

Brief description

Teacher-researchers from six schools investigated how teaching and learning can be systematically improved, and how teachers' expectations of their students are implicated in this. This project demonstrated how teachers and universities can work together to promote evidence-based practice in New Zealand schools. Rather than provide a narrow interpretation of evidence-based practice that refers to the use of assessment data by teachers, we have shown how teacher-researchers can become familiar with large amounts of research literature as part of their work as teachers and use it to plan interventions to improve their practices, change their school cultures, and inform their communities.

38. Making sense of learning at secondary school: An exploration by teachers with students

Funding: 2 years (2004–2005)

Research team

Ruth G Kane, College of Education, Massey University, with Nicola Maw and Christopher Chimwayange.

Brief description

This project used teachers as researchers and students as active respondents to examine ways in which students' learning processes are shaped by what happens in secondary school classrooms. Findings from this study demonstrated that teachers and students held similar conceptions of student learning, which was predominantly understood to be learning as building knowledge and understanding that can be applied in different situations. Both students and teachers identified respectful relationships, relevance of subject and objectives, appropriate preparation, clear and open communication and supportive classroom environments as essential to student learning. Central to supporting student learning was the need to acknowledge and respond to a diversity of learning preferences.

39. Enhanced teaching and learning of comprehension in Years 4–9: A research–practice collaboration for Mangere schools

Funding: 2 years (2004–2005)

Research team

Stuart McNaughton, University of Auckland; Mei Kuin Lai, Meaola Amituanai-Toloa, and Sasha Farry.

Brief description

This project asked questions about the nature of effective instruction for reading comprehension, and the nature of effective school-based interventions. Using two main hypotheses: first, that more effective teaching could be developed through a professional learning community that has a continuing process of critical discussion and problem solving, based on evidence (Robinson & Lai, 2006); and secondly, that effective instruction would include a range of attributes, such as explicit teaching of strategies, and deliberate teaching of vocabulary (Pressley, 2002), the analysis found that it is possible to develop more effective teaching that impacts directly on the reading comprehension achievement of Year 4–9 children.

40. Effective teaching in different cultural contexts: A comparative analysis of language, culture, and pedagogy

Funding: 2 years (2004–2005)

Research team

Tanya Samu; Leonie Pihama, Director International Research for Māori and Indigenous Education; Tupeni Baba, Professor of Pacific Studies; and Trish Stoddart, Professor of Classrooms and Schools, with the International Research Institute for Māori and Indigenous Education (IRI), Centre for Pacific Studies, and School of Education at The University of Auckland.

Brief description

The project's key aim was to analyse a range of teaching practices for Māori and Pasifika students in Auckland city schools and conduct a comparative analysis of the teaching and learning of these students in classrooms that focus on Māori and Pasifika language and culture with classrooms where instructional practices focus on mainstreaming, and there is no, or limited input, of Māori and Pasifika language and cultural instruction. Furthermore, the research sought to extend the current understanding of effective generic teaching practices by identifying the context-specific and general principles of effective teaching practice for Years 7 and 8 Māori and Pasifika pupils.

41. Addressing the needs of transient students: A collaborative approach to enhance teaching and learning in an area school

Funding: 1 year (2006)

Research team

Jude MacArthur, **Nancy Higgins**, Donald Beasley Institute, Dunedin, with an area school in South Otago.

Brief description

This project looked at transient students and their families in a small rural area school (Years 1–13) where the difficulties faced by these students were highlighted as being of particular concern. A “community of practice” was established in the school to collaboratively, and reflexively explore issues relating to teaching and learning for transient students.

42. “Write-on!”: Investigations into relationships between teacher learning and student achievement through writing

Funding: 1 year (2006)

Research team

Ruth Boyask and Kathleen Quinlivan, University of Canterbury; Sue Carswell, Aranui High School.

Brief description

This pilot study investigated possibilities for teacher intervention in the learning and achievement of diverse students in low-decile secondary schools in the context of a whole-school writing programme intended to raise student achievement. The extent to which individual students were successful in practical terms appeared dependent upon the extent to which their identity as learners meshed with school norms, which were determined largely by national norms dictated by external assessment.

43. Enhanced teaching and learning of comprehension in Years 5–8 in Otara schools

Funding: 2 years (2005–2006)

Research team

Stuart McNaughton, Mei Kuin Lai, Meaola Amituanai-Toloa, and Sasha Farry, Woolf Fisher Research Centre, The University of Auckland, with eight Otara schools: Wymondley Road School, East Tamaki School, Ferguson Intermediate School, Flat Bush School, Mayfield School, Rongomai School, Sir Edmund Hillary Collegiate Middle School, and Yendarra School.

Brief description

This study replicates a previous intervention which took place in schools in Mangere from 2003 to 2005 (see project 37 above). The conclusion from the Mangere study was that it is possible to develop more effective teaching that impacts directly on the reading comprehension achievement of Year 4–8 children in the culturally and linguistically diverse decile 1 schools of South Auckland. This second study, which added a further seven schools with approximately 1400 students, adds considerable weight to that conclusion. The level of gains overall in both studies were in the order of one year's gain in addition to nationally expected progress over three years.

44. Technology use and the teaching of mathematics in the secondary classroom

Funding: 2 years (2005–2006)

Research team

Mike Thomas, Mathematics Education Unit, The University of Auckland, with Senior College of New Zealand; Pakuranga College, Auckland; and Texas Instruments.

Brief description

In this study, we considered whether the National Certificate of Educational Achievement (NCEA) Levels 2 and 3 assessment standards had presented any challenges for teachers in terms of their use of technology in mathematics teaching, and explored both the qualitative and quantitative aspects of technology use in the classroom under NCEA Levels 2 and 3 assessment standards, and their relationship to theoretical perspectives in the research literature and quality learning.

45. Building bilingual pedagogical content knowledge through critical action research: A pilot study 2006

Funding: 1 year (2006)

Research team

John McCaffery and **Helen Villers**, The University of Auckland, **Stephen May**, University of Waikato, together with **Donald McLean** and **Chris Lowman**, Richmond Road School, and senior staff of The A'oga Fa'a Samoa; and Māori and Pasifika elders associated with the school.

Brief description

This pilot project aimed to assist the school's practitioners to develop and apply critical research methods to identify the existing strengths in multicultural–bilingual policy and practice. It also identifies gaps and needs, and provides critical assessment and analysis in relation to current best evidence in critical multicultural and bilingual education theory.

46. Mathematics: She'll be write!

Funding: 1 year (2007)

Research team

Tamsin Meaney, Tony Trinick, and Uenuku Fairhall, and Teachers at Kura Kaupapa Māori o te Koutu.

Brief description

The focus of this project was to discover effective ways to develop students' mathematical writing in te reo Māori. It was assumed that this would lead to better understanding of mathematics. The investigation was undertaken at Te Kura Kaupapa Māori o te Koutu which caters for students from Years 0–13, many of whom are second language users of te reo Māori. It involved all the teachers as well as two outside researchers considering a number of issues around the role of writing in mathematics.

47. LEMMA: Learning Environments with Mathematical Modelling Activities

Funding: 2 years (2009–2010)

Research team

Caroline Yoon, The University of Auckland, in partnership with Auckland Girls' Grammar School and Northcote College.

Brief description

The LEMMA project—Learning Environments with Mathematics Modelling Activities—grew out of a concern that many of our mathematics students struggle to use mathematical concepts flexibly to solve problems in the real world. The LEMMA project designed learning environments that encourage students to develop sophisticated conceptual understandings and communication competencies through mathematical modelling activities. Like a lemma in mathematics, LEMMA is not a grand theorem or solution, but merely “a stepping stone to a larger result” (Wikipedia, 2009)—the desired result being improved mathematical competencies among New Zealand secondary school students..

48. Arts e-learning and the online specialist teacher: Increasing opportunities for quality student outcomes

Funding: 2 years (2009–2010)

Research team

Jan Bolton and **Joanna Higgins**, Jan Bolwell, and Delia Baskerville, Victoria University of Wellington, with Manutuke School, Gisborne Intermediate, Ormond School, Whakarongo School, and Rangikura School.

Brief description

The project researched the potential of an arts e-learning environment to provide quality arts teaching and produce successful learning outcomes for students. It involved the implementation of an innovative, Web-based programme that makes possible the expertise of dance and drama specialists online in Years 6–8 classrooms where such expertise would not normally otherwise be available.

49. Investigating the relationship between whole-school approaches to education for sustainability and student learning

Funding: 2 years (2007–2008)

Research team

Chris Eames, Barry Law, University of Canterbury; Miles Barker, University of Waikato; Heidi Mardon, Enviroschools Foundation.

Brief description

This study looks to respond to a need for research into the relationship of a whole-school approach to Education for Sustainability (EfS) to student learning. The use of a whole-school approach has been advocated clearly in the literature, but evidence of any link to student learning is lacking. This research has developed two draft research and practice-informed analytical frameworks, one that examines a whole-school approach to EfS, and a second that examines student learning in EfS as the development of action competence. These frameworks were administered in five case schools by researchers working with school staff to co-research the relationship between a whole-school approach and student learning in EfS.

50. School is out: Students' experiences of non-traditional learning

Funding: 1 year (2010)

Research team

Keryn Pratt, Ken Pullar, and Ann Trewern, the University of Otago, with John Buchanan, Dunstan High School; Lyn Cooper, Wakatipu High School; Linda Miller, Fiordland College; Lynda Walsh-Pasco, Roxburgh Area School; Andrea Robertson, University of Otago College of Education.

Brief description

The experience of New Zealand school students is increasingly changing. In addition to their traditional schools, students are participating in virtual classrooms and other forms of learning, such as classes through The Correspondence School and vocational programmes. This study aimed to extend previous research by looking at the experience of students in one regional cluster of schools who are taking classes in multiple formats, from multiple providers, described here as “blended learning”.

51. The relationship between English language and mathematics learning for non-native speakers

Funding: 1 year (2004)

Research team

Phillipa Neville-Barton and Bill Barton, The University of Auckland, with Unitec, Victoria University of Wellington, Macleans College, Auckland Girls' Grammar School, Tangaroa College, Wellington Girls' College.

Brief description

This project was undertaken to better understand the relationship between English language and mathematics learning for students for whom English is an additional language (EAL). We were interested in exploring the extent of any difficulties in learning mathematics attributable to low proficiency in English language, and also discovering particular language features that might cause problems.

52. Augmenting primary teaching and learning science through ICT

Funding: 2 years (2009–2010)

Research team

Kathrin Otrell-Cass, Bronwen Cowie, and Elaine Khoo, the University of Waikato, with Candy Hart and Tanya Thompson, Saint Andrew's Middle School.

Brief description

This study explored how information communication technologies (ICTs) in primary classrooms can enhance the teaching and learning of science. By building on teachers' and students' prior knowledge and experience with ICTs, we investigated how ICT use can structure activities to offer enhanced opportunities for active participation in science. The project generated examples of how ICTs can support subject-relevant ways of exploring and communicating science, and evaluating what has been learnt.

53. Mathematics classrooms: Explorations into the teaching/learning nexus

Funding: 2 years (2007–2008)

Research team

Glenda Anthony, Margaret Walshaw, Tim Burgess, Peter Rawlins, Anne Lawrence, and Liping Ding, Massey University, and three secondary schools.

Brief description

While research has told us much about primary school mathematics classrooms, we know less about what happens at the secondary school level. Our Teaching and Learning Research Initiative project, a video study involving three Year 9 classes, enabled us to learn more about the mathematical relationships and practices in secondary classes. To date, our analysis has focused on the communities of practices, and the various ways in which teachers organise instructional activities. What we found was that, irrespective of school decile level, years of teachers' experience, and the proficiency level of students, teachers are highly focused on doing the best possible job for their students. Teachers work hard to enhance students' confidence and their understanding of mathematics. They bring their knowledge and skill to the task to deal with the "heady" demands of teaching mathematics, as well as the organisational and management matters that are part and parcel of any busy classroom.

54. Sustainability of effective teaching and school practices developing a model for sustaining and extending literacy achievement

Funding: 2 years (2008–2009)

Research team

Mei Kuin Lai, Stuart McNaughton, and

Helen Timperley, Selena Hsiao, Sophie Kercher, Sasha Farry, Angela McNicholl, Alaisa Pritchard, The University of Auckland, with Mangere schools cluster, Mangere Analysis and use of Student Achievement Data [AUSAD] cluster, Otara schools cluster, Otara Extending High Standards Across Schools [EHSAS] cluster, and Mayfield Primary School.

Brief description

The focus of this TLRI project was on sustaining gains in reading comprehension made through TLRI funded interventions in two clusters of schools in South Auckland. The aim was to develop a model for sustaining effective teaching and school practices so that student achievement continued to improve once the interventions ended. This involved identifying and explaining the conditions that enabled schools to continue improving achievement; explaining how the conditions interrelated; and how these relationships resulted in differing patterns of achievement after the intervention.

55. Learning to “friendly argue” in a community of mathematical inquiry

Funding: 2 years (2009–2010)

Research team

Roberta Hunter, Glenda Anthony (Palmerston North Campus), Massey University, with Zain Thompson and Heather Howe, West Harbour School; Elizabeth Heather, Teokotai Toma Flatbush School.

Brief description

This project explored the sorts of culturally responsive pedagogy teachers can engage in to optimise equitable access for students to proficient forms of mathematical talk and activity. The project sought to further our knowledge of the effects on student achievement and mathematical disposition when a specific focus is placed on building a classroom culture of mathematical inquiry and argumentation.

56. Statistics is boring...because it makes you think!

Funding: 2 years (2009–2010)

Research team

Sashi Sharma, Phil Doyle, The University of Auckland, with Viney Shandil and Semisi Talakia'atu from Marcellin College, Auckland.

Brief description

In this collaborative research study, teaching experiments were carried out in Year 9 classes of predominantly Pasifika students. There were three phases. During the planning phase the research team planned activities and envisioned how dialogue and statistical activity would unfold as a result of the classroom activities. Data were collected during the teaching phase, and then the data were analysed using a grounded theory approach. The findings have implications for the teaching of statistical literacy.

57. Teaching literature in the multicultural classroom

Funding: 2 years (2007–2008)

Research Team

Terry Locke, Gail Cawkwell, and Emilie Sila'ila'i, with Alison Cleary, Willem de Beer, Sandy Harris, Elizabeth Lumby, David Riley, Janet Sturgess, and Julie-Ann Thumath, the University of Waikato, with Henderson Intermediate School, Wymondley School, Somerville School, and Macleans College.

Brief description

The project Teaching Literature in the Multicultural Classroom focused on ways in which pupils engaged with literary texts in primary and secondary classrooms which were multicultural and multilingual in their composition. The word “engage”, as used here, had two facets. One was attitudinal. Did pupils enjoy responding to and composing literary texts? The other was practice related. What specific practices did teachers engage students in to facilitate their response to literary texts and to foster acts of literary composition?

58. Enhancing capacity to analyse students' writing

Funding: 2 years (2006–2007)

Research team

Libby Limbrick, Pauline Buchanan, Marineke Goodwin, and Helen Schwarcz, The University of Auckland, with participating schools in the Manurewa Enhancement Initiative.

Brief description

In 2006 and 2007 the teaching of writing was investigated using an action research process in partnership with a cluster of Manurewa schools which has one of the highest concentrations of Māori students in the country: 40 percent identified as Māori and a further 26 percent, Pasifika. A previous study in the area had identified low achievement levels in student writing samples (Limbrick, Buchanan, Goodwin, & Schwarcz, 2005) consistent with the National Educational Monitoring Project reports of Māori and Pasifika students' underachievement in writing. That study had also observed that teachers' confidence in their ability to teach writing, as well as their knowledge of the writing process, was low.

59. The Classroom InSiTE Project: Understanding classroom interactions to enhance teaching and learning in science and technology in Years 1–8

Funding: 3 years (2005–2007)

Research team

Bronwen Cowie, Judy Moreland, Alister Jones, and Kathrin Otrell-Cass, the University of Waikato with teachers from six Waikato-based schools.

Brief description

A significant goal of the Classroom InSiTE (Classroom Interactions in Science and Technology Education) research project was to develop a more robust understanding of, and to enhance, classroom interactions as a key aspect of assessment for learning (AfL) interactions. International research suggests that AfL practices are effective in enhancing student achievement, and may be particularly effective with students who are low achievers (Black & Wiliam, 1998). AfL can be distinguished from other forms of assessment by its purpose, which is to enhance student learning. The contingent and emergent nature of AfL means that it is generally embedded in and accomplished through teacher–student classroom interactions.

60. Measuring classroom literacy practice

Funding: 3 years (2005–2007)

Research team

Judy Parr, Eleanor Hawe, and Claire Sinnema, The University of Auckland, with Wendy Koefed and staff at Newmarket Primary School; Maria Heron and staff at Māngere Central School; Wendy Foster at Berkley Middle School.

Brief description

To date, much of the information we have about classroom practice has come from teacher self reporting with data gathered through surveys, logs, diaries, and/or interviews (Burstein, McDonnell, Van Winkle, Ormseth, Mirocha, & Guitton, 1995). There are in New Zealand few, if any, widely used and proven instruments for gathering information about teachers' literacy practice, yet, in order to plan for and explain patterns of student achievement, we need systematic evidence of what is happening in classrooms. This study involved developing and trialling an instrument (Observation Guide) that captured critical elements of teachers' literacy practice and discusses the processes and challenges associated with this.

61. Te reo tataitai: Developing rich mathematical language in Māori immersion classrooms

Funding: 2 years (2005–2006)

Research team

Tamsin Meaney and Tony Trinick, The University of Auckland, with Uenuku Fairhall (Te Arawa: Ngāti Rangiwewehi, Waitaha, and Ngāti Te Rangi: Ngāti Hē), Principal of Kura Kaupapa Māori o te Koutu.

Brief description

Analysis of the Māori medium numeracy project (Te Poutama Tau) student data found that language proficiency was a significant factor in student achievement in the higher stages of the number framework (Christensen, 2003). In kura kaupapa Māori, students often have te reo Māori as a second language. Consequently, there is a need to understand more about how to support students learning mathematical content at the same time that they are learning te reo Māori and, in particular, the mathematics register, te reo tataitai.

62. Researching Understanding of Learning and Teaching (RULT): A case study in using practice-based research to develop a school-wide learning community

Funding: 2 years (2007–2008)

Research team

Elaine Mayo, Lindsay Connor, University of Canterbury, with Avonside Girls' High School.

Brief description

This research project investigated how teachers, who are using a peer-coaching model to help each other gain a deeper understanding of teaching and learning, can distil and share their emerging experiential knowledge, and how this influences future praxis (thinking and acting) in teaching. The school aimed to build a reflective learning community where teachers collaborate deliberately to support improved outcomes for students.

63. A school for the 21st century: Researching the impact of changing teacher practice on student learning

Funding: 2 years (2007–2008)

Research team

Michael Denny, Lynda Shanks, and Karyn White, Alfriston College; Rosemary Hipkins, NZCER.

Brief description

This project investigated ways teachers understood and responded to innovative approaches to scheduling time for teaching and learning, and sought evidence that the innovations had a significant effect on student learning.

64. Culturally responsive pedagogy and assessment in primary science classrooms: Whakamana tamariki

Funding: 2 years (2009–2010)

Research team

Bronwen Cowie, Kathrin Otrell-Cass, Ted Glynn, and Helena Kara, University of Waikato, with Marion Anderson and Asri Parkinson, Vardon School, Hamilton; Jude Doyle, Arataki Primary School, Tauranga; Asri Parkinson and Christine Te Kiri, Peachgrove Intermediate School, Hamilton.

Brief description

In this project, four teachers addressed their diverse students' need for a range of different opportunities to develop more sophisticated expertise in science. They achieved this by drawing on the principles and practices of culturally responsive pedagogy and assessment for learning. Interviews and classroom observations indicated that students, and their families, took greater ownership and responsibility for science learning when teachers incorporated and built on the funds of knowledge and lived experience that all students bring from their homes and communities.

65. Developing teacher–researcher partnerships to investigate best practices: Literacy learning and teaching in content areas of the secondary school

Funding: 2 years (2006–2007)

Research team

Trevor MacDonald and Christina Thornley, The University of Auckland, with Teulia Consultancies, Auckland SDA High School, Roxburgh Area School, and Waitaki Girls' High School.

Brief description

This project was undertaken as a partnership between Auckland Seventh Day Adventist High School, Education Associates Ltd, Roxburgh Area School, Teulia Consultancy, and Waitaki Girls' High School. During the two-year project, the partnership members in each school developed, trialled, and researched a range of literacy pedagogical approaches to determine their efficacy in improving learning and achievement for Years 9, 10, and 11 secondary school students.

66. Pasifika teachers in secondary education: Issues, possibilities and strategies

Funding: 1 year (2005)

Research team

Tony Brown, Nesta Devine, and Emilie Sila'ila'l, the University of Waikato, with Elsie Leslie, Hamilton Boys' High School; Margaret Paiti, Pasifika Liaison Officer, MOE; Sandra Umaki, Forest View High School; Jay Williams, Gisborne Boys' High School.

Brief description

The study outlined the characteristics that Pasifika people assign to themselves and how these are challenged within educational contexts and at interfaces with other New Zealand cultures. It examined how schools assist and resist the accommodation of new Pasifika teachers. It surveyed the rationales for building Pasifika representation within the teaching force and how they shape the expectations and experience of new Pasifika teachers. Through examining how notions of Pasifika cultural identity for individuals are held in place between community ties, genealogical roots, and oral histories, the study asked how such identities might be seen as reaching out to possible futures within the context of mainstream secondary education within New Zealand. In the light of the analysis, the study examined how future priorities might be formulated and offers preliminary advice on how and where future initiatives might be targeted to bring more Pasifika teachers into the profession and to improve the retention of these teachers.

67. Building students' inferential reasoning: Statistics curriculum Levels 5 and 6

Funding: 2 years (2009–2010)

Research team

Maxine Pfannkuch, Chris Wild and Matt Regan, The University of Auckland; Pip Arnold, Cognition Education; with Anna Martin, Avondale College; Jason Ellwood, Otumoetai College; Jason Florence, Otahuhu College; Jeanette Saunders, St Cuthbert's College; Lindsay Smith, Epsom Girls' Grammar School; Marina McFarland, Auckland Girls' Grammar School.

Brief description

The project was a two-year collaboration among two statisticians, two researchers, and nine teachers. There was an urgent need to understand how students can progressively develop informal statistical inferential reasoning from Levels 5 to 8 of the new curriculum. The project team designed innovative approaches to develop students' informal inferential reasoning and sought evidence that these innovations had a significant effect on improving students' statistical reasoning in this domain.

68. CoRe: A way to build pedagogical content knowledge for beginning teachers

Funding: 1 year (2011)

Research team

Chris Eames, John Williams, Anne Hume, John Lockley, Bill Henderson, Kim Pickering, University of Waikato; Sean Fullick, Matamata College; Kevin Meyer, Otumoetai College; Duncan Smith, St Pauls Collegiate; Warren Steffert, Morrinsville College; Gillian Stockman, Rotorua Boys' High School; Elize Terblanche, Takapuna Grammar School.

Brief description

Research has shown that one of the factors which enable effective teachers is their rich pedagogical content knowledge (PCK). Beginning teachers need support to develop this PCK and CoRes (Content Representations) have been proposed as a model for doing this. The study reported here brought together science and technology experts in content and pedagogy, early career secondary teachers, and researchers to design a CoRe to assist development of teacher pedagogical content knowledge (PCK). The study then researched the early career teachers' use of the CoRe in their planning and delivery of a unit in their classrooms to examine the impact of the CoRe on teaching and learning, and on the development of the teachers' PCK.

69. School achievement: Why summer matters

Funding: 2 years (2010–2011)

Research team

Stuart McNaughton, Woolf Fisher Research Centre, The University of Auckland, together with the Mangere AUSAD Management Team.

Brief description

The aim of the research was to identify those school-based and family-based practices that support continued development of literacy in Years 4–8 students in urban decile 1 schools over the summer. Key findings included confirmation that the summer learning effect is a major barrier to ongoing achievement; that specific preparation by teachers for students and guidance for their parents were associated with a lower summer learning effect; and that when implemented fully, a three-component intervention designed from local evidence was associated with essentially no summer learning effect.

70. Teaching algebra conceptually in Years 9 and 10

Funding: 2 years (2010–2011)

Research team

Chris Linsell, University of Otago College of Education, St Hilda's Collegiate, King's High School.

Brief description

Many students struggle with introductory algebra and teachers have little to guide them to assist their students learn this important component of mathematics. The project was designed to explore and create teaching approaches to assist students in years 9 and 10 to develop a conceptual understanding of algebra. The effect of these teaching approaches was documented by use of a diagnostic tool that assessed and made students' knowledge and strategic thinking in algebra explicit.

71. Connecting curriculum, connecting learning: negotiation and the arts

Funding: 2 years (2010–2011)

Research team

Deborah Fraser, Viv Aitken, Graham Price, and Barbara Whyte, the University of Waikato School of Education, with Penny Deane at Omanu School, Nikki Keys at Welcome Bay School, Elicia Pirini at St Thomas More, Whakarongo Tauranga, Michelle Parkes and Coryn Knapper at Knighton Normal School.

Brief description

The project builds on a previous TLRI project and on a current pilot project on arts-based integration. Arts-based integration specifically links teaching and learning in an arts-based discipline to other areas of the curriculum. The project focused on ways in which children seek, use, and create knowledge when learning this way. It also examined how teachers and the wider community are influenced by and engaged in arts-based integration.

72. Understanding the pedagogy of school-based marae: A culturally responsive learning context in secondary schools

Funding: 2 years (2010–2011)

Research team

Jenny Lee and **Leonie Pihama**, Rautaki Ltd, and three Auckland-based school marae.

Brief description

This research project investigated the role of school-based marae as a culturally responsive pedagogy in mainstream secondary schools. The project involved the participation of students, teachers, whānau, and community representatives of three urban school marae within the Auckland region and examined the pedagogy of school marae and the way it impacts on the educational achievement of Māori learners and their whānau.

73. Developing a place-based approach to outdoor education in Aotearoa/New Zealand

Funding: 2 years (2010–2011)

Research team

Mike Brown, University of Waikato, Mt Maunganui College, and Ngaruawahia High School.

Brief description

This project sought to understand how teachers conceptualise teaching and learning in outdoor education. The researchers explored the possibilities made available by linking outdoor education with sites of local significance and meaning for participants and investigated how both teachers and students responded to a place-based approach.

74. Every-body counts? Reimagining health and physical education in primary schools

Funding: 2 years (2011–2012)

Research team

Kirsten Petrie, University of Waikato.

Brief description

Health and Physical Education (HPE) in New Zealand primary schools has been dominated by games, sports, fitness, and illness prevention. This narrow and teacher-centred version of HPE has been “nice for some and nasty for others” (Evans & Davies, 2002, p. 17). This project draws on the shared expertise of teachers and researchers to reimagine HPE in ways that support teachers and children to have meaningful experiences, relevant to their diverse backgrounds, needs and interests. In doing so, this project offered a rare glimpse of curricular ideals enacted in practice.

75. Critical multiliteracies for “new times”

Funding: 2 years (2011–2012)

Research team

Susan Sandretto, Jane Tilson, University of Otago; Port Chalmers School, Tahuna Normal Intermediate School, Dunedin North Intermediate School, St. Hilda’s Collegiate School, Fairfield School, Outram School, Green Island School.

Brief description

People increasingly need to be able to use a greater range of literacies, or multiliteracies, than in the past. This project addresses the paucity of research in New Zealand on multiliteracies by working with teachers and students to understand how teachers can prepare students for a multiliterate future.

76. Networked inquiry learning in secondary science classrooms

Funding: 2 years (2011–2012)

Research team

John Williams, Kathrin Otrell-Cass, Elaine Khoo, Bronwen Cowie, and Alison Basel, Wilf Malcolm Institute of Educational Research (WMIER), the University of Waikato.

Brief description

This research project explored and theorised how inquiry teaching and learning in science can be supported through e-networked environments such as blogs or email and how online resources accessed through the Internet can enable individual and group exploration of content, skills, and resources.

77. “Thinking historically”: The role of NCEA research projects in motivating history students to develop disciplinary expertise

Funding: 2 years (2011–2012)

Research team

Mark Sheehan, Giselle Byrnes, and Jonathan Howson, Victoria University of Wellington; with Paul Enright, Logan Park High School; Lara Hearn, Queen’s High School; Alice Wards, Wellington East Girls’ College.

Brief description

Working with approximately 100 senior history students in three schools (two in Dunedin and one in Wellington), this two-year project investigated how internally-assessed, inquiry-based, NCEA research projects motivate senior secondary school history students to engage with the disciplinary features of history and develop expertise in the subject. It also explored how this type of learning contributes to young people developing historical thinking and historical consciousness.

78. Key competencies: How school guidance counsellors contribute to student learning

Funding: 2 years (2013–2014)

Research team

Kathie Crocket and **Elmarie Kotzé**, University of Waikato (WMIER), Trident High School, Whakatane High School, and Edgecumbe College.

Brief description

In this project school guidance counsellors worked alongside university researchers to investigate how school guidance counselling contributes to students developing, strengthening, and using key competencies. It also looked at how school counsellors participate and can further participate in the implementation of *The New Zealand Curriculum*. The project paid particular attention to two key competencies, *managing self* and *relating to others*.

79. Designing knowledge building communities in secondary schools

Funding: 2 years (2012–2013)

Research team

Kwok-Wing Lai, University of Otago, with OtagNet, CantaNet/Waimate High school, TaraNet/Coastal Taranaki School, Volcanics, FarNet, DunedinNet/Kavanagh College, OtagoNet/Fiordland College, WestNest/Westland High School, GCSN/Avondale Girls’ School, and Bayfield High School.

Brief description

This project explored the design of a computer-supported knowledge building community in senior secondary classes in NZ. It examined the roles of teachers and the strategies they used to support students’ advancement of knowledge; the effects of the knowledge building community on the change of students’ domain knowledge, collaborative learning skills, the skills of learning how to learn, and dispositions as lifelong knowledge builders; and how to develop a knowledge building culture in secondary schools.

80. Extending innovative leadership to enable e-learning for better student outcomes in primary schools

Funding: 2 years (2013–2014)

Research team

Julie Mackey and **Niki Davis**, University of Canterbury, and five schools.

Brief description

This project aimed to develop knowledge and capability about innovative school leadership strategies to enable e-learning focused on raising student achievement. Transformative change with digital technologies is complex and continually evolving, and principals need to address all eight interconnected dimensions identified by Schrum and Levin (2012) to encourage and enable change. While there is no formula for success, transformative practices occur in climates of relational trust, where innovation and risk taking are expected and supported. The study confirmed that even highly experienced principals benefit from the opportunity to explore leadership strategies employed in other schools over time, and that this experience contributes to their own ability and confidence to lead e-learning initiatives within their own schools and communities.

81. Porous learning: Using netbooks at home to enhance literacy learning

Funding: 2 years (2013–2014)

Research team

Rebecca Jesson, The University of Auckland, Woolf Fisher Research Centre, and Manaiakalani cluster of schools and Manaiakalani Education Trust.

Brief description

In one cluster of schools, students' families are assisted to purchase netbooks for students to use both in and out of school. Theoretically, alignment between school and home contexts promotes ongoing development in literacy learning. This project explored the factors that both enabled learning and created barriers to learning at home for students in a low socioeconomic community. The study investigated ways to inform families and schools, and also equip them with strategies to enhance children's literacy within a digital learning environment at home.

82. Enabling academic literacy: Smoothing the transition to tertiary learning

Funding: 2 years (2013–2014)

Research team

Lisa Emerson, Massey University, and three schools in the Whanganui-Manawatu region.

Brief description

This action research project investigated how to more effectively enable students' transition to tertiary learning through academic literacy learning interventions at senior secondary school and first-year tertiary study. The project developed a strategy to enhance students' acquisition of academic literacy which can be used widely in secondary school and tertiary settings.

83. Using multiplication and division contexts to enhance young children's part-whole thinking in mathematics

Funding: 2 years (2013–2014)

Research team

Brenda Bicknell and **Jenny Young-Loveridge**, The Wilf Malcolm Institute of Educational Research, the University of Waikato, with two schools.

Brief description

This project explored how multiplication and division contexts can be used to help young children develop a greater appreciation of the properties of numbers. By exposing children to problems not traditionally used with this age group, the study contributed to improving student outcomes in mathematics for a diverse range of learners. These problems included contexts familiar to the children where explicit equal-sized groups (e.g., two socks in a pair, five fingers in a glove, ten eggs in a carton) were used. The children, as a community of learners, worked together as a collective group to talk about, model, and find solutions for problems using multiple representations. In the process of participating and contributing to the classroom discourse, they were encouraged to communicate their ideas mathematically using language, symbols, and texts.

84. Higher order thinking through SOLO and e-learning

Funding: 2 years (2012–2013)

Research team

Tony Hunt, Frank Walton, Mark Gan, Earl Irving, and Mavis Haigh, The University of Auckland, and teachers at Howick College, led by Steve Martin.

Brief description

Using design-based research this project investigated a secondary school approach to teaching which uses the SOLO (Structure of Observed Learning Outcomes) taxonomy. This involves the design of learning objectives and structuring of classroom activities using e-learning, with the goal of developing students' higher-order thinking skills. The project also investigated the effectiveness of a professional development programme to develop the use of this approach across the curriculum.

85. Summer reading to overcome the summer effect: A partnership between a school, a library and the school community

Funding: 2 years (2014–2015)

Research team

Marilyn Gwilliam, Papatoetoe Central School and **Libby Limbrick**, The University of Auckland; Christine Fok, Sati Singh, and Adel Chanson, Papatoetoe Library.

Brief description

The project investigates a "context based solution" (McNaughton et al., 2012), designed to improve student achievement in reading. It has been developed collaboratively by a school, a local library, and a research consultant. It includes a summer component. Within the project we will look for ways to align school, whānau, library, and personal literacy development activities during 2014–2015. The outcomes of the 2014 summer component will inform teaching and learning programmes in reading in 2015, as will the emerging findings of the research project throughout 2015 and beyond.

86. Beyond play: Learning through science investigation

Funding: 2 years (2014–2015)

Research team

Azra Moeed, Dayle Anderson, Rex Bartholomew, Craig Rofe, Victoria University of Wellington, with Wellington High School; Bishop Viard College; Te Kura Māori o Porirua; Muritai School; Karori West Normal School.

Brief description

The Science learning area of *The New Zealand Curriculum* requires students to learn about “features of scientific knowledge and the processes by which it is developed” and “carry out science investigations using a variety of approaches”. Evidence suggests, however, that students’ experience of science investigations is limited.

This project examines how participating primary and secondary school teachers and their students conceptualise science investigations and how these conceptualisations develop following a negotiated intervention. The intervention will support focused teaching to extend the range of approaches to science investigation with a view to developing students’ understandings about the nature of science.

School sector

In progress (continuing or at final editing stage)

87. Talking about text: Changing patterns of discourse in low-decile secondary classrooms

Funding: 2 years (2015–2016)

Research team

Aaron Wilson, **Jacinta Oldehaver**, Woolf Fisher Research Centre, The University of Auckland; Tamaki College; Aorere College.

Brief description

This design-based research project will identify and change patterns of talk about texts in secondary school English, health/physical education, and science classrooms with a high proportion of Māori and Pasifika learners. Constraints and enablers that hinder and facilitate students’ and teachers’ participation in classroom and computer-mediated discussions about texts will be identified. An intervention (or interventions) to address identified barriers will be designed in collaboration with a team of teacher-researchers, trialled and evaluated. Valued student outcomes investigated include subject and subject-literacy achievement outcomes as well as participatory and affective outcomes related to reading and discussing texts.

88. Creating active citizens? Interpreting, implementing and assessing “personal social action” in NCEA social studies

Funding: 2 years (2015–2016)

Research team

Bronwyn Wood, Michael Johnston, Victoria University of Wellington; Rowena Taylor and Rose Atkins, Massey University Institute of Education; Joanne Wilson, Palmerston North Girls’ High; Kathy Grey, Horowhenua College; Amy Perkins, Bishop Viard College; Mary Greenland, Nayland College.

Brief description

Since 2013, one internally assessed social studies achievement standard at each of the three levels of the NCEA requires students to take personal social action. Whilst these new standards hold the potential to support transformative citizenship education, previous research suggests that taking social action can be viewed as “risky” and that school-based social actions stick to safe versions of active citizenship. This project seeks to support teachers and students in interpreting and implementing the new social action achievement standards in critical and transformative ways. Key outputs of this research will include the development of effective practice exemplars.

89. The impact of children’s everyday learning on teaching and learning in classrooms and across schools

Funding: 2 years (2015–2017)

Research team

John O’Neill, Massey University and **Roseanna Bourke**, Judith Loveridge, Victoria University of Wellington; Bevan Erueti, Andrew Jamieson, Massey University; with Central Normal School, Te Kura o Tākaro, Roslyn School.

Brief description

This 3-year research project proposes a systematic attempt to link knowledge about how children learn informally outside school to changed teaching and learning practices in the classroom. In year one, we gather rich data to understand how Year 5 diverse students learn in everyday activities and settings outside school. Students create digital autobiographies that contribute directly to a professional learning process for their teachers. In year two, we support their Year 6 teachers to trial pedagogies that draw on students’ informal learning strengths. In year three, the same teachers mentor colleagues in other schools to replicate the experience. The project will provide robust knowledge of how and how far teachers’ pedagogical practices change as they incorporate students’ informal learning into classroom relations, activities, pedagogies, and assessments.

90. Enhancing teaching and learning of primary mathematics through the use of apps

Funding: 2 years (2015–2016)

Research team

Nigel Calder and **Carol Murphy**, University of Waikato, with teacher-partners: Rebekah Whyte, Tahatai Coast Primary School; Glen Storey, Te Akau Ki Papamoa Primary School; Monique Storey, Te Akau Ki Papamoa Primary School.

Brief description

The focus of the project is on teaching and learning primary mathematics through the use of apps with mobile digital devices. Specifically, the project aims to use the lens of teachers’ technology, pedagogy, and content knowledge (TPACK) to advance and investigate the use of apps in primary mathematics classrooms, and their influence on students’ mathematical learning. Through co-inquiry based on a researcher-practitioner partnership, we will co-construct a framework to evaluate and inform teacher pedagogical decisions regarding the use of apps to enhance students’ conceptual understanding. It is envisaged the framework will support teacher professional learning and development in mathematics pedagogy.

91. Exploring student thinking and problem solving in iPad-supported learning environments

Funding: 2 years (2015–2016)

Research team

Garry Falloon, University of Waikato; Mike Malcolm, Tonia Fenemor, Lissa Mangino, and Sjann McDivitt, Leamington Primary School, Cambridge.

Brief description

This project is an exploration of students' thinking and problem-solving skills when working collaboratively using iPads in three different learning environments in a primary school. During 2012 and 2013, the researcher developed and utilised a purpose-built digital data tool that provided unique insights into how students learn with and through iPads for literacy tasks. This proposal builds on this early work by extending its focus to the *thinking* key competency, by identifying how teachers might use devices such as iPads and apps to support thinking and problem-solving capability development. Results will inform practice by identifying specific teaching and curriculum designs and strategies for enhancing these capabilities, when using these devices in different curriculum areas and in different primary school-use scenarios.

92. The Relationship between Participation in Singing Programmes and Student Well-Being in a Christchurch Primary School

Funding: 2 years (2016–2017)

Research team

Daphne Rickson and Robert Legg (Victoria University of Wellington), Dianna Reynolds (Waitakiri School).

Brief description

Our research investigates the perceived relationship between singing programmes and well-being in a school community affected by the Christchurch earthquakes. Singing programmes were introduced specifically to enhance wellbeing, and wellbeing scores remain high despite extremely challenging conditions. We will articulate the factors that have enabled the singing programmes to be developed and sustained, find ways to improve our programmes, and model the perceived correlations between classroom singing and perceptions of well-being.

93. Generating positive outcomes by Year 5 to 8 priority learners in writing: An inquiry into effective teacher practice

Funding: 2 years (2016–2017)

Research team

Judy Parr and Murray Gadd; Liam Carran, James Robertson

Brief description

This project will identify critical elements in optimising writing for upper primary priority learners. Teacher-researchers from partnership schools will inquire iteratively into the impact of their learning on practice and on student engagement, progress and achievement. Partners will collaborate to identify systematically precisely what is involved in positive changes.

94. Tuhia ki te Ao - Write to the natural world

Funding: 2 years (2016–2017)

Research team

Sasha Matthewman, University of Auckland; Georgina Stewart, John Morgan, Michelle Johansson, Molly Mullen

Brief description

This project will link ecological sustainability with literacy and identity in three secondary school learning areas. Cycles of planning and evaluation will investigate how the integration of the "future focus" of ecological sustainability informs students' bicultural environmental identities and benefits their "3D literacy" achievement.

95. Enhancing the intercultural capability of students of additional languages in New Zealand's intermediate schools

Funding: 2 years (2016–2017)

Research team

Martin East, Constanza Tolosa (University of Auckland) and Jocelyn Howard (University of Canterbury)

Brief description

Intercultural capability is an important 21st century skill for young people. Programmes in languages additional to the language of instruction provide a key means to enhance this capability, and the new NZC learning area Learning Languages has created dedicated curriculum space for students in Years 7 to 10 to learn an additional language. Building on published documents and Ministry-funded initiatives designed to help schools with introducing languages programmes, this project investigates how five teachers in four intermediate schools are enacting curriculum expectations and enhancing learner outcomes with a particular focus on developing students' intercultural capability.

96. An Architecture of Ownership: Students and teachers forging agentic identities in an innovative learning environment

Funding: 2 years (2017–2018)

Research team

Noeline Wright and Rachel McNae (University of Waikato)

Brief description

This project examines how students and teachers in a newly built school, forge their identities within innovative physical, curriculum and relational innovative learning environment spaces to reflect modern learning needs. The Architecture of Ownership concept (Fletcher, 2008) is the unifying framework that will be used to understand how teachers and students at Rototuna Junior High School make sense of, and develop agency in this new school.

Post-school sector

Completed projects

[97. Effective teacher-education practice: The impact of written assessment “feedback” for distance learners](#)

Funding: 1 year (2005)

Research team

Valerie Margrain, Trish Muirhead, and Angela Edlin, The Open Polytechnic of New Zealand, joined by Anne Meade, Anne Meade Associates.

Brief description

This project contributes to research on the role of written assessment feedback. It identifies barriers that may undermine the potential effectiveness of written feedback, and reports on what kind of written feedback is likely to be most effective in engaging students with learning. It aims to add to the knowledge base about tertiary teaching and learning, in particular formative assessment practice in distance/flexible education; enhance the links between educational research and distance/flexible teaching practices; and build research capability among lecturers involved in an early childhood teacher education programme.

[98. Narratives of beginning Māori teachers: Identifying forces that shape the first year of teaching](#)

Funding: 1 year (2004)

Research team

Paora Stucki and Te Wānanga o Aotearoa Bachelor of Teaching (Primary) lecturers and their ex-students, with Ruth Kane from Massey University as adviser.

Brief description

Beginning teachers find the reality of “real” teaching overwhelming. Decisions are often made early to leave the profession and evidence suggests this is particularly so for Māori teachers. Te Wānanga o Aotearoa had its first BTchg graduates in 2003. This project enlists the mentoring of an experienced researcher (Ruth Kane, Massey University) to support wānanga staff and their new graduates in a collaborative narrative enquiry into the lived experience of the first year of teaching.

[99. Improving tertiary student outcomes in their first year of study](#)

Funding: 2 years (2004–2005)

Research team

Nick Zepke and **Linda Leach**, Massey University, in partnership with Northland Polytechnic, Manukau Institute of Technology, Waikato University, Universal College of Learning, Wellington Institute of Technology, and Christchurch College of Education.

Brief description

This project identifies practical strategies for use by tertiary education institutions (TEIs) in New Zealand to improve student retention, persistence, and completion. It was designed to explore the experiences of students, teachers, and administrators in seven tertiary institutions.

100. [Understanding and enhancing learning communities in tertiary education in science and engineering](#)

Funding: 2 years (2005–2006)

Research team

Mike Forret and **Chris Eames**, Centre for Science and Technology Education Research, University of Waikato.

Brief description

This project aimed to enhance the quality of teaching and learning experiences in tertiary science and engineering education. The study sought to develop a better understanding of how existing systems, processes, and practices influence both students' and lecturers' perceptions of, and attitudes towards, science and engineering, and science and engineering education. The study addresses the nature of tertiary learning communities and seeks to understand, from the perspective of the participants, what it means to teach and learn tertiary science and engineering.

101. [Teachers learning mathematics: Professional development research](#)

Funding: 1 year (2007)

Research team

Bill Barton and Judy Paterson, Auckland University with eight secondary teachers from eight different schools in the Auckland region; Deborah Ball, The University of Michigan; and Anne Watson, Oxford University.

Brief description

The issue of mathematical knowledge of teachers has been documented in New Zealand for 80 years. For example, the 2004 New Zealand Ministry of Education Teacher Census showed that 25 percent of secondary mathematics teachers had no university mathematics qualification—a rise from 21 percent in 1977.

This one-year study aimed to investigate the development of teachers' own mathematical knowledge for teaching. Seven secondary teachers from the Auckland region each developed some aspect of their mathematical knowledge. Two external researchers supported the teachers and facilitated reporting.

102. [Who, what, how, and why? Profiles, practices, pedagogies, and self-perception of adult literacy practitioners](#)

Funding: 1 year (2004)

Research team

Robyn Chandler, Robert Tobias, with Vivienne Boyd, Julie Cates, Kellie Shanahan, and Cathy Solomon. Canterbury Adult Basic Education Research Network (CABERN), Christchurch.

Brief description

This project is designed to fill a gap in understanding the differing pedagogies and practices, motivations, and self-perceptions of adult-literacy practitioners in Aotearoa New Zealand. The project team members are part of a larger local network of practitioners and researchers and profile practitioners in Canterbury using a variety of methods including questionnaires, interviews, focus groups, and practice journals.

103. [Addressing obstacles to success: Improving student completion, retention, and achievement in science modules in applied health programmes, with particular attention to Māori](#)

Funding: 2 years (2006–2007)

Research team

Kelly Gibson-van Marrewijk, Waikato Institute of Technology, with Jane Stewart, Gudrun Dannenfeldt, Kevin Stewart, Jackie McHaffie, Rosemary Hipkins, the New Zealand Council for Educational Research.

Brief description

This project will investigate factors that impact on student completion, retention, and achievement rates for science modules in applied health programmes, with particular attention to Māori. The research comprises two stages. The first, in 2006, explores what science knowledge is necessary for new graduates if they are to be competent midwives and nurses. The second phase develops, pilots, and evaluates an intervention in the science modules taught in the applied health programmes at a representative tertiary education institution. This intervention will delineate the necessary science knowledge for new midwifery and nursing graduates.

104. [Teaching and learning in the supervision of Māori doctoral students](#)

Funding: 2 years (2007–2008)

Research team

Elizabeth McKinley and **Barbara Grant**, The University of Auckland, with The Capability Building programme within Ngā Pae o Te Māramatanga (the National Institute of Research Excellence for Māori Development and Advancement); The University of Auckland; the University of Waikato; Te Whare Wānanga o Awanuiārangī; Les Williams; and current practitioners of supervision who are also supervisors of Māori doctoral students.

Brief description

The project aimed to enhance understanding of the supervision practice of Māori doctoral candidates (from both students' and supervisors' perspectives), so as to improve outcomes for those candidates and their institutions. This project was framed within kaupapa Māori methodology.

105. [An exploration of the pedagogies employed to integrate knowledge in work-integrated learning in New Zealand tertiary educational institutions](#)

Funding: 1 year (2008)

Research team

Richard Coll, Research Director, Science & Engineering, University of Waikato, with AUT, Massey University, Unitec, New Zealand Association of Cooperative Education, and the University of Waikato.

Brief description

This project seeks to explore the pedagogies in work-integrated learning programmes (WIL) in the context of full-time undergraduate students undertaking WIL as part of their programme of study in New Zealand TEIs.

106. [The role of initial teacher education and beginning-teacher induction in the preparation and retention of New Zealand secondary teachers](#)

Funding: 2 years (2005–2006)

Research team

Glenda Anthony and **Ruth Kane**, College of Education, Massey University, with Universite du Quebec en Outaouais, Canada; University of Waikato; Auckland College of Education; Massey University; Ruth Mansell, independent consultant, Te Tari Puna Ora o Aotearoa/New Zealand Childcare Association; University of Otago; and Te Whare Wānanga o Awanuiārangi.

Brief description

This project examined beginning secondary teachers' experiences of initial teacher education (ITE) and induction, identifying factors that promote or hinder teacher capability and retention.

107. [Valid and practical tertiary assessment of learning outcomes](#)

Funding: 3 years (2006–2008)

Research team

Luanna Meyer, Victoria University of Wellington, with Massey University, Te Whare Wānanga o Awanuiārangi, and Manukau Institute of Technology.

Brief description

This research investigated policy and strategies for the assessment of student learning outcomes across a wide range of tertiary institutions. The research team included tertiary lecturers and researchers in various disciplines and professional programmes, and participants in the research were tertiary practitioners, students, and tertiary leaders. The purpose of the project was to better understand and support evidence-based, valid, and practicable assessment strategies to enhance the teaching and learning process.

108. [Success for all: Improving Māori and Pasifika student success in degree-level studies](#)

Funding: 2 years (2007–2008)

Research team

Airini, University of Auckland Faculty of Education, with The University of Auckland Faculty of Education; the Faculty of Medical and Health Sciences; and the National Institute of Creative Arts and Industries, Careers Centre.

Brief description

This evidence-based project targeted Māori and Pasifika student success in degree-level tertiary education. The focus was on the ways in which non-lecture teaching and learning helps or hinders Māori and Pasifika student success in preparing for, or completing, degree-level studies.

109. [Learning environments and student engagement with their learning in tertiary settings](#)

Funding: 2 years (2008–2009)

Research team

Nick Zepke and **Linda Leach**, College of Education, Massey University, with nine partners including one wānanga, two universities, four polytechnics, one PTE, and one large community provider.

Brief description

This project investigates student engagement with their learning process across the range of providers in tertiary settings and gauges the importance and nature of environmental influences on that engagement. The project has four phases: the first completes a literature review to inform the process; the second adapts international survey instruments on learning climate and student engagement to the New Zealand tertiary climate; the third surveys tertiary teachers to identify their approaches to achieving student engagement; and the fourth interviews selected students in order to follow up key findings identified in the student survey. The findings will provide insight into ways to create learning environments that engage learners.

110. [The transition from secondary to tertiary education in mathematics](#)

Funding: 2 years (2008–2009)

Research team

Mike Thomas, The University of Auckland and **Sergiy Klymchul**, Auckland University of Technology, with Mt Albert Grammar and Epsom Girls' Grammar schools.

Brief description

This project will investigate secondary and tertiary mathematics education and provide evidence of whether key differences exist. Any differences that are discovered will be described qualitatively. It aims to examine the influence of a number of key factors in the transition from secondary to tertiary mathematics education, and consider how to smooth this transition. It will identify and analyse the reasons for any differences at the two levels and explore ways to enrich mathematics teaching and learning, employing ideas from both secondary and tertiary educators.

111. [Unlocking student learning: The impact of Teaching and Learning Enhancement Initiatives on first-year university students](#)

Funding: 3 years (2006–2008)

Research team

Kogi Naidoo, Massey University, in partnership with Victoria University of Wellington, University of Otago, Lincoln University, Auckland University of Technology, University of Canterbury, University of Waikato, and The University of Auckland.

Brief description

This research will focus on the provision of academic development and its impact on the success of first-year student learning at all universities in New Zealand. It will harness the experience and expertise of academic developers and teachers as partners. The goal of the project is to increase students' learning and success in targeted large first-year classes through the development and implementation of Teaching and Learning Enhancement Initiatives (TLEIs) that make a difference to student learning and success. The study will empirically identify a range of academic development strategies and approaches that directly enhance student success and learning outcomes.

112. [Exploring e-learning practices across the disciplines in a university environment](#)

Funding: 2 years (2009–2010)

Research team

Marcia Johnson, Wilf Malcolm Institute of Educational Research (WMIER), University of Waikato, with a multidisciplinary team from across the University of Waikato, including educational researchers, lecturers, and the team leader for eEducation university staff development.

Brief description

This is a two-year project exploring ICT/e-learning across several disciplines and with students from diverse backgrounds at the University of Waikato. It will address issues of tertiary-level pedagogy, e-pedagogy, and research. In the first year the project will explore ICT practices within four case-study environments. Data collected will be analysed and the findings used to discern and distil pedagogical practices. E-learning capacity will be built through the recruitment of additional case-study participants during the second year. Findings from both years will be used to leverage pedagogical change and to close participatory gaps for students and lecturers.

113. [Integrating values in The New Zealand Curriculum: Caught or taught?](#)

Funding: 1 year (2011)

Research team

Ross Notman, Darrell Latham, University of Otago College of Education.

Brief description

Currently, there are gaps in our knowledge about values development in New Zealand schools. We do not know what teachers, curriculum leaders, and principals believe and know about values implementation in the new curriculum, nor do we know about the effect on student learning of current implementation strategies for teaching values. This study aims to explore (a) the ability of schools to integrate values into their teaching and learning programmes, and (b) the effect of approaches taken to implement values throughout the school.

114. [Shifting the conceptualisation of knowledge and learning in the integration of the new New Zealand curriculum in initial and continuing teacher education](#)

Funding: 4 years (2008–2011)

Research team

Vanessa Andreotti, the University of Canterbury; Kathleen Quinlivan; and Jane Abbiss, with UC Education Plus.

Brief description

Initial and ongoing teacher education will be a key factor in the success of *The New Zealand Curriculum*. This project examines shifts in the conceptualisation of knowledge and learning in learning outcomes and course design in initial and inservice teacher education.

115. [Learning to become “assessment capable” teachers](#)

Funding: 3 years (2010–2012)

Research team

Mary Hill, The University of Auckland; **Bronwen Cowie**, University of Waikato; **Alison Gilmore**, University of Canterbury; and **Lisa Smith**, University of Otago.

Brief description

This project aimed to enhance understanding about how pre-service teachers learn to use assessment in the service of students’ learning. It found that in the main, both primary and ECE ITE students leave their programmes ready and able to begin using assessment to enhance children’s learning, though their understandings about involving children in assessment and building children’s assessment capability are still emergent. Primary ITE students’ assessment learning was clearly influenced by the introduction of national standards and the use of standards-based assessment. These changes overshadowed assessment learning related to other current curriculum-related priorities, such as the use of assessment to monitor and improve key competencies. Like their primary colleagues, graduating ECE ITE students possess much wider conceptions of assessment at the end of their programmes, as compared to their time of entry.

116. [Mathematics undergraduate teaching: Perspectives and interactions](#)

Funding: 2 years (2010–2011)

Research team

Mike Thomas, **H. Bartholomew**, **B. Barton**, **B. Kensington-Miller**, Mathematics Department, The University of Auckland, Faculty of Education, The University of Auckland, Centre for Academic Development, The University of Auckland.

Brief description

The high demand for mathematics in undergraduate education means that large numbers of students enrol in the subject. Lecturing remains the prime delivery mode for teaching such courses. We addressed undergraduate mathematics’ lecturing through three components: lecturers and their development; student perspectives on mathematics; and interactions in the lecturing environment. We used theoretical frameworks from secondary contexts, developing them for tertiary application. This research aimed to improve the didactics of lecturing, and builds on studies on school/university transitions.

117. [“Bootstrapping” statistical inferential reasoning](#)

Funding: 2 years (2011–2012)

Research team

Maxine Pfannkuch, The University of Auckland, Sharleen Forbes, Victoria University of Wellington, and John Harraway, University of Otago.

Brief description

This project was a 2-year collaboration among three statisticians, two researchers, 16 Year 13 teachers, seven university lecturers, one workplace practitioner, three teacher professional development facilitators, and one quality assurance advisor. The project team designed innovative computer-based approaches to develop students’ inferential reasoning and sought evidence that these innovations were effective in developing students’ understanding of statistical inference.

118. [Making authentic and trustworthy practice-based judgements of graduating student teachers](#)

Funding: 2 years (2011–2012)

Research team

Mavis Haigh, Fiona Ell, Lexie Grudnoff, Vivienne Mackisack, University of Auckland.

Brief description

This project investigated how four primary schools and one university worked together to provide valid, reliable judgements of student teachers' readiness to teach. Using Social Judgement Theory we have shown that making such judgements is a complex and integrated process. Overall judgements of student teachers' readiness to teach are likely to be holistic judgements with consideration of relationships between different dimensions of practice. We have also identified the processes associate teachers engage in to make decisions about readiness to teach.

119. [Re-envisioning tertiary teaching and learning of difficult concepts: How “threshold concepts” afford understanding of problematic ideas](#)

Funding: 2 years (2012-2013)

Research team

Mira Peter and **Ann Harlow**, the University of Waikato, and research practitioners in Electronic Engineering, Doctoral Research and Design, Management Communication and English.

Brief description

According to threshold concept theory, there are special concepts in each academic discipline that, once grasped, reveal new and previously inaccessible ways of thinking about that subject. International interest is growing in how threshold concept theory can transform tertiary teaching and learning. What changes do lecturers make to curriculum and pedagogy when they focus on threshold concepts and how do tertiary students respond to threshold concept-informed curriculum? The researchers will work with tertiary lecturers in electronics engineering, doctoral research and writing, management communication and English.

120. [Learning the work of ambitious mathematics teaching](#)

Funding: 3 years (2012–2014)

Research team

Glenda Anthony and **Roberta Hunter**, Massey University and Victoria University of Wellington.

Brief description

Many New Zealand students are disaffected with their mathematics learning experiences and concerns about mathematics underachievement are persistent. This project sought to improve the mathematical experiences and educational outcomes for all students by looking to advance current practices for the preparation of mathematics teachers. In looking for new ways to support prospective teachers to not only 'think' like teachers, but also to put what they know into action, this project looked to introduce practice-based pedagogies within our university-based mathematics methods courses.

121. [On the edge: Shifting teachers' paradigms for the future](#)

Funding: 2 years (2013–2014)

Research team

Jane Gilbert, NZCER and **Margaret Franken**, University of Waikato (WMIER), with Cultivating Leadership, Margaret Giroux, and three schools.

Brief description

This project explored the conditions needed for New Zealand teachers to experience the transformational learning we argue is needed for future-oriented schooling. Its focus was teachers' thinking. The research looked at how a group of teachers' thinking changed as they participated in a professional learning and development (PLD) programme. This PLD had two parts: a university course on educational futures, and a workshop designed to support cognitive growth.

122. [Copy, cut and paste: How does this shape what we know?](#)

Funding: 2 years (2013–2014)

Research team

Elaine Khoo, The Wilf Malcolm Institute of Educational Research, Faculty of Science and Engineering and Faculty of Arts and Social Sciences, the University of Waikato.

Brief description

Software is not neutral. It comes with social and cultural assumptions that enable particular actions while making others less possible and imaginable. In this study, the notion of *software literacy* as the expertise involved in selecting, using, and critiquing the software when this is *used* to achieve particular goals is introduced and defined. Two lecturers will collaborate to examine the notion of *software literacy*—how it develops and impacts on the teaching, learning, and student understanding and use of the practices associated with knowledge generation, communication, critique, and use in engineering and media studies.

123. [Work of teacher educators – New Zealand](#)

Funding: 2 years (2014–2015)

Research team

Alex Gunn, and David Berg from the University of Otago, with AP Mary Hill and AP Mavis Haigh of The University of Auckland.

Brief description

This internationally inspired and linked project builds on research into the discursive construction and material conditions of teacher educators' work to understand how these impact upon teaching and learning in initial teacher education (ITE). The first phase takes a national perspective, investigating how NZ universities construct teacher education using advertisements for ITE staff, related documents, and the interpretations of those responsible for these ads. The second phase zooms in on two ITE institutions to focus on the actual work of teacher educators and how ITE students understand these work activities as productive of their learning.

124. [Visualising chance: Learning probability through modelling](#)

Funding: 2 years (2014–2015)

Research team

Stephanie Budgett and **Maxine Pfannkuch**; Chris Wild and Paul Murrell, software developers/statistical interactive graphic experts; Ilze Ziedins, Rachel Fewster and Marie Fitch, practitioners/lecturers.

Brief description

Probabilistic reasoning is needed to help us operate sensibly and optimally in the face of uncertainty due to randomness in processes that affect us at all levels in society. However, current teaching of probability is mainly based on a mathematical approach, paying insufficient attention to modelling and simulating realistic problems. The modelling approach promises to make transparent concepts of the nature and effects of randomness, often inaccessible within the formal framework of mathematical probability. This exploratory study aims to learn how to build conceptual understanding of probability and how to orientate thinking towards an approach more closely aligned with practice.

Post-school sector

In progress (continuing or at final editing stage)

125. [Strengthening mathematical thinking and reasoning proficiency in primary teacher education: Leveraging the potential of a system innovation](#)

Funding: 3 years (2014–2016)

Research team

Beverley Cooper and **Bronwen Cowie**, Philippa Hunter, Merilyn Taylor, Mira Peter, The University of Waikato.

Brief description

This project investigates the development of the Mathematical Thinking and Reasoning Proficiency (MTRP) of student-teachers enrolled in primary initial teacher education programmes. It follows a sub-group of these student-teachers into the classroom as beginning teachers. The focus is on how student-teachers utilise and benefit from activities embedded across their courses and resources specifically designed to support their independent self-regulated learning. The project will contribute to understandings of the systems required to assist student-teachers in the development of the MTRP needed for the various aspects of their professional role: mathematics teaching, student data analysis, and administration.

126. [Moving beyond the threshold: Investigating digital literacies and historical thinking in New Zealand universities](#)

Funding: 2 years (2014–2015)

Research team

Sydney Shep, Michael Dudding, Erin Helyard, Matt Plummer, Elizabeth Towl, Rebecca Priestley, Rhian Salmon, Irina Elgort, Victoria University of Wellington.

Brief description

This project investigates how university students and teachers use digital media to support the acquisition and retention of disciplinary threshold concepts for transformative learning and improved student outcomes in history-informed subjects. An NZ-wide environmental survey, a MOOC-enabled workshop series, and the development, implementation, and evaluation of digitally-mediated coursework will provide research evidence to enhance teaching practice and benefit future-oriented student learning. Innovative features include the creation of a digital history portal for communication, project management, and dissemination plus the use of self-reflective e-portfolios. Mentoring junior teacher-researchers who are at the forefront of digital adoption and e-pedagogy is a priority.

127. [Reengineering an engineering course: How flipped classrooms afford transformative teaching, learning, and workplace competency](#)

Funding: 2 years (2015–2016)

Research team

Mira Peter, Elaine Khoo, Jonathan Scott, Howell Round, The University of Waikato.

Brief description

This project builds on and extends our research on threshold concepts (TCs) to explore how an extended flipped classroom model can enhance student learning of TCs in a mandatory first-year electronic engineering class. By following students into the workplace we explored how their mastery of TCs and their learning about what it means to think and act as electronic engineers translates into their workplace competency. Our proposed project will thus address major gaps in New Zealand tertiary education research to demonstrate how an ICT-supported flipped classroom model affords in-class and workplace learning of transferable learner-practitioner 21st century competencies.

128. [Using a wellbeing framework to recognise, value and enhance the broad outcomes for learners in adult literacy and numeracy programmes](#)

Funding: 2 years (2017–2018)

Research team

Jane Furness and Judy Hunter (University of Waikato), Bronwyn Yates, Peter Isaacs, Katrina Taupo (Literacy Aotearoa)

Brief description

In this project, researchers will work with tutors in adult literacy and numeracy (L/N) programmes. We will draw on an existing wellbeing framework to facilitate its use in classroom practice and extend its application in multicultural settings in order to make visible the links between wellbeing and L/N learning for diverse learner populations. An innovative combination of technologies and tools of teaching and learning will support success for twenty-first century learners.

Cross sector

Completed projects

129. [Field-based early childhood teacher education: “But are they already teachers...”](#)

Funding: 2 years (2009–2010)

Research team

Liz Everiss, Margaret Brennan, and Diane Mara, The Open Polytechnic of New Zealand, and Waikato Institute of Technology (WINTeC).

Brief description

This is a small-scale, multisite exploratory study that used an ethnographic research approach. It sought to capture the reality of field-based initial teacher education (ITE) using interactions in the classroom between all participants in the teaching and learning process as a tool to begin to document, describe, and understand the nature and form of field-based ITE. By taking this approach the study contributes to the limited research base which explores the inner workings of teacher-education programmes internationally.

130. [Learning literacy learning in e-learning contexts: Mining the New Zealand action research evidence](#)

Funding 1 year (2011)

Research team

Vince Ham, Ann Hatherly Core Education, Sue McDowall, NZCER, and Ronnie Davey, University of Canterbury.

Brief description

Academic researchers and teachers from early childhood education (ECE) centres, primary schools, and secondary schools worked collaboratively to re-examine data from archived action research inquiries in order to highlight how literacy learning can take place in e-learning contexts.

131. [Learning journeys from early childhood into school](#)

Funding: 3 years (2011–2013)

Research team

Sally Peters and Vanessa Paki, University of Waikato.

Brief description

This research will investigate ways of enhancing children’s learning journeys from early childhood education into school, and explore the impact of transition practices over time. It aims to help address some of the current gaps in understanding and to provide robust evidence of the longer-term impact of strategies designed to support transitions.

Cross sector

In progress (continuing or at final editing stage)

[132. Literacy and narrative in the early years: Zooming in and zooming out](#)

Funding: 3 years (2014–2016)

Research team

Amanda Bateman and Margaret Carr, University of Waikato; Elaine Reese, and Alex Gunn, University of Otago.

Brief description

This project is about exploring and strengthening young children’s story-telling expertise. Building on research that shows that children’s narrative competence is linked to later literacy learning at school, we want to understand more fully how these conditions for literacy learning are, and could be, supported within early education settings. Using a design-based methodology and a multi-layered approach to analyse story-telling episodes within early childhood centres and school classrooms, we will research the contributions of story-partners and other supports for developing early narrative competence. Our aim: to contribute to the international literature and develop storying strategies with and for teachers.

[133. Riariakina ō Rongo Hirikapo](#)

Funding: 2 years (2014–2015)

Research team

Margie Hohepa, Vanessa Paki, Sally Peters from the University of Waikato; Tere Gilbert (tumuaki), Tirau Anderson, Te Manu Pohatu (kaiako-researchers) from Te Kōhanga Reo o Ngā Kuaka; Laura Hawksworth (tumuaki), Doris Anne Olliver (kaiako-researcher) from Te Kura Kaupapa Māori o Tōku Māpihi Maurea.

Brief description

“Riariakina ō rongo hirikapo” is a collaborative cross-sector research project involving a kōhanga reo, a kura kaupapa Māori, and university-based researchers. This project will examine the development of an “akoranga whakawhiti”, a transition programme that will be based at Te Kōhanga Reo o Ngā Kuaka in Hamilton. The research will provide important new insights into learning and teaching in Māori-medium settings and into ways of enhancing children’s transitions from Māori-medium early childhood education to Māori-medium classrooms.

[134. Teaching for Equity: How do we do it?](#)

Funding: 2 years (2016-2017)

Research team

Lexie Grudnoff, Fiona Ell, Mavis Haigh, Mary Hill, Kimai Tocker

Brief description

This project focuses on teaching for equity. Using Knowledge Building software, a thirteen-member collaborative inquiry community of university-based teacher educators and primary teachers will develop rich explanations of teaching for equity and then conduct inquiries to determine how this enhanced knowledge may improve learning outcomes for priority learners.

135. [Making mathematical thinking visible](#)

Funding 2 year (2016-2017)

Research team

Caroline Yoon and John Moala (University of Auckland), Phil Kane, Peter Radonich, Julie De Saedeleer, Robyn Gandell, Alan delos Santos, Dimitri Leemans, James Sneyd, Vivien Kirk.

Brief description

This project designs reporting tools for documenting the mathematical thinking that emerges during non-standard mathematics tasks called modelling activities. These tools will raise the visibility of mathematical thinking in modelling activities, addressing the often-heard criticism: 'these are fun problems, but where's the maths?'

136. [Using mobile learning in free-choice educational settings to enhance ecological literacy](#)

Funding 2 year (2017-2018)

Research team

Chris Eames (University of Waikato) and **Claudio Aguayo** (Auckland University of Technology); Nik Massey (Ahuroa School); Marea Neill (Goat Island Marine Discovery Centre); Nick Shears (Institute of Marine Science, University of Auckland)

Brief description

This study investigates how free-choice learning experiences can be designed to incorporate mobile technologies to enhance student development of marine ecological literacy. It involves designing an intervention based on mobile learning for use by a class of senior primary students, their teacher and their parents before, during and after a visit to Goat Island and the Goat Island Marine Discovery Centre.

137. [Transforming information literacy space\(s\) to support student learning](#)

Funding 3 years (2017-2019)

Research team

Lisa Emerson and Ken Kilpin (Massey University), Senga White (Southland Boys High School); Angela Feekery (Massey University); Heather Lamond (Massey University); Catherine Doughty (Whitireia Polytechnic); Anne Macaskill (Victoria University); Anna Greenhow (Massey University)

Brief description

Information literacy (IL) is central to learning in the digital age. Lloyd (2003) describes IL as "the meta-competency of the knowledge economy." If the next generations of New Zealanders are to become effective digital citizens within the knowledge economy (Gilbert, 2005; Lloyd, 2003), it is vital that, at whatever age they leave formal education, they are equipped to engage with an ever-changing information landscape.