

School-based research makes a difference

Woolf Fisher Lead Teacher Masters Scholarships



In 2010, the Woolf Fisher Trust and The University of Auckland launched a \$1.25 million scholarship fund to enable teachers in Auckland and Northland to undertake school-based research aimed at improving student achievement.

The Woolf Fisher Lead Teacher Masters Scholarships provide funding for release from teaching to complete a year's study at masters level in school-based research and development methods at the Woolf Fisher Research Centre.

Throughout 2011, staff at the Woolf Fisher Research Centre worked with the first four scholarship students to provide guidance and supervision for their research and grow their knowledge of research methods. "They have all learned how to use evidence from their schools to design more effective teaching programmes which will have major benefits for their students and future students," says Professor Stuart McNaughton, Director of the Woolf Fisher Research Centre. "They all share an incredible thirst for knowledge and a strong desire for their students to succeed."

Over the past ten years, the team at the Woolf Fisher Research Centre have shown how decile 1 schools can substantially raise achievement for Māori and Pacific children from low income communities to within average levels in literacy achievement nationally. This highly successful model has been proven to raise achievement in studies involving more than 10,000 Māori and Pacific students in Mangere and Otara in Auckland, and students on the West Coast of the South Island.

The model focuses on enabling teacher-researchers to use evidence from their schools to inform changes to their teaching that will enhance student achievement. The model helps teachers to examine students' backgrounds and needs, together with their teaching and knowledge, and to use this to lift and extend student achievement.

The funding from the Woolf Fisher Trust has enabled this model to be extended through the Woolf Fisher Lead Teacher Masters Scholarships. After a year of intensive research and learning, the inaugural recipients of the Scholarships are now using the findings from their research to inform their work and to work with others in their schools to raise student achievement in their communities.

"This opportunity allowed me to look at the issues from a schooling improvement point of view, ask questions and challenge my assumptions. I started looking at the issues with fresh eyes."

- Trish Holster, scholarship recipient 2011.

Improving student achievement in mathematics



Trish Holster

Leader of Mathematics and Assessment at Clayton Park School in Auckland.

As leader of mathematics and assessment at her school, Trish was becoming increasingly concerned that some senior students weren't progressing as quickly in mathematics as she would have hoped. School data suggested that some students' achievement in mathematics was plateauing at Stage 5 of the Numeracy Project's Number Framework and that some students had been at Stage 5 for more than two years.

Research opportunity:

To identify what the school can implement, change or improve to move students more quickly from Stage 5 to 6 and progress their learning in mathematics.

The research

Trish conducted a 'profiling study' for her research. This involved analysis of longitudinal school-wide achievement data gathered over a period of four years, in-depth interviews with teachers about their mathematics teaching practices, and numeracy interviews with Stage 5 students at the school. She also used teacher questionnaires, completed by half the staff, and analysed other evidence the school collected on teaching strategies being used with specific students.

Student and teacher interviews helped describe the teaching and learning strengths and needs in numeracy at the school. "I wanted to understand the 'glass ceiling' that was preventing these students from moving to Stage 6 and beyond and if there were any particular teaching practices that were making this less likely," reflects Trish. A mixture of qualitative and quantitative data enabled Trish to get a clear picture of the strengths and needs for both teachers and students to accelerate learning.

Trish compared the school's achievement data against the backdrop of national and international achievement patterns. "Our older students seemed to be working at a higher stage in multiplication and division than in addition and subtraction, similar to the national data," she says. "I looked at students' basic fact knowledge, how it was taught, and at how Stage 6 was defined across several Ministry of Education documents and by teachers in the study."

The findings

Interestingly, the evidence suggested to Trish that the school's student data might under-represent children's actual achievement levels. "One student was actually starting at Stage 6, two were well into Stage 6 and one had achieved Stage 6," says Trish. "This suggested to me that we need to support teachers to make more accurate assessments so that they are able to challenge students' learning in a way that accelerates it appropriately."

Trish developed an assessment tool specifically for her research that identified patterns of student strengths and specific gaps in place value knowledge. Students in the study showed a flexible use of the early mental computation strategies they knew. "Their key difficulty was in 'unbundling' larger units like hundreds to make smaller ones. Student responses suggested this was a problem of procedural knowledge rather than a problem of conceptual knowledge," she reports.

Trish also found teachers had a good knowledge of learning progressions described by the Number Framework, but suggests that next teaching steps don't automatically result from this knowledge. "Teachers require a deep understanding of the areas of knowledge that students need in order to take their learning further," she says. "Having knowledge of the Framework was not the same as having integrated knowledge of the Framework. It is about understanding how the elements of knowledge work together to make learning happen."

The data also revealed that 80% of students at the school who plateaued in numeracy had experienced a summer drop in their learning. The drop depended largely on where the student was achieving in the distribution of Stages. "Rather than it being random, there was a very interesting pattern that I would like to explore further," says Trish.

A new focus at Clayton Park School

Principal Paul Wright says that Trish's strong curriculum leadership and robust analysis of teacher practice is being used this year to design and deliver meaningful professional development and pedagogical support for teachers at Clayton Park School.

A coaching model has been introduced at staff meetings to grow leadership in numeracy and to support teachers to further integrate their knowledge of the number framework. There is also more emphasis on how teachers use benchmark data and identify learning pathways for students. "We are going back to assessment theory to ensure teachers understand the purpose of the assessment and the approach is consistent across the school," says Trish. "We are also looking at how the assessment is moderated and how target students are identified to ensure that our teachers are able to scaffold their learning and expose them to learning opportunities that are sufficiently challenging."

A spotlight on guided reading



Jan Rogers

Resource Teacher: Literacy for over 10 years. From her base at Kaikohe East School in Northland, Jan supports local teachers to meet the needs of Year 1-8 students who are experiencing difficulties in literacy learning.

Local evidence suggested to Jan that many teachers were finding it difficult to accelerate the literacy learning of low progress students despite long-term professional development in her area. Historically, government-funded literacy professional development has been organised into clusters of literacy leaders from a group of schools. Jan questioned the effectiveness of this approach as not all teachers from each school attend cluster meetings which are held off-site, so they are reliant on others to transfer the learning within their school.

Research opportunity:

To better understand the professional influences on teacher decision making when they teach students to read.

The research

Jan conducted an evaluative case study in a decile 1 primary school. She worked closely with teachers of Year 4-6 students to observe their practice in guided reading sessions with a group of low progress students. A series of observations were conducted with each teacher using a rubric developed by Jan specifically for her research. Dr Rebecca Jesson, Senior Researcher at the Woolf Fisher Research Centre and Jan's supervisor says, "the rubric is a valuable tool to identify teachers' professional and evaluative knowledge and how their knowledge is demonstrated in practice."

Jan conducted semi-structured and open-ended interviews before and after each observation to provide an opportunity for the teachers to reflect on and discuss aspects of their understanding around teacher practice, teacher knowledge and their current learning. "The process provided me with valuable insight into the specific knowledge that teachers had about teaching reading, their knowledge and understanding of assessment and how they used their knowledge to devise programmes that would fit individual student needs within a group reading situation," says Jan.

The findings

Jan's research revealed that teachers in the study had very different levels of knowledge, both of teaching literacy and assessment knowledge, which impacted on their practice and ability to be effective in their instruction of guided reading. One example of this was the teachers' difficulty in linking information from assessments to the teaching. This activity is important as the information provides next steps teaching, and follow up assessment helps to identify how successful that teaching has been. "It has highlighted how complex it can be to support those students who are underachieving," says Jan.

While teachers could describe the tools they used to assess students' reading, as predicted, they had difficulties transferring the assessment information to their decision-making in guided reading with the students. In addition to this, the assessment tool they used did not necessarily provide the information required for grouping the students appropriately, particularly for students reading at lower levels.

Also, teachers needed more knowledge about how to integrate precise teaching strategies into each guided reading session to support student learning.

Implications for professional learning in her local area

Jan believes that it is critical for professional learning and development to focus on improving teachers' knowledge and transferring their knowledge into practice. She argues that literacy professional development needs to take into account the different levels of knowledge that individual teachers have. "It is more than just knowing about assessment or about guided reading," she asserts. "It is knowing what assessment to use at the right time and how to use information from data to support effective decision-making that accelerates students learning."

Having developed the rubric for her research, Jan is now using it as an effective tool for teachers to identify gaps in their own knowledge and practice and to help them plan 'next steps' for learning. "Jan's research highlights the complexity of knowledge required for the effective instruction of guided reading. If we are to raise student achievement it is critical to provide professional development that acknowledges the individual learning needs of teachers as well as students," adds her supervisor Dr Rebecca Jesson.

Jan is now sharing the evidence from her thesis with resource teachers locally and regionally. "Doing this research has provided me with the critical evidence to support my work and promote wider professional discussion about how we can effectively support teachers and work more closely with them to increase knowledge about assessment practices and pedagogical content so that they can make better informed decisions."

Giving voice to students



Rochelle Telfer

Senior Academic Dean at Tikipunga High School in Whangarei. Rochelle also coordinates the Starpath Project within Tikipunga High School in partnership with The University of Auckland's Starpath Project.

Tikipunga High School is one of five original Starpath partner schools and has been working in partnership with The University of Auckland's Starpath Project since 2007. The project works with a selection of low decile secondary schools to implement key strategic outcomes for Māori and Pacific students and students from low socio-economic communities. One of the key Starpath strategies they have implemented is an academic counselling initiative that helps students to set, track and achieve their academic goals.

Research opportunity:

To get a systematic analysis of students' experiences and perceptions of academic counselling, determine what they find useful and important and how they feel it supports their progress. To identify how whānau teachers could better support students through academic counselling.

The research

Whānau teachers are responsible for students throughout their time at Tikipunga High School. As part of the academic counselling initiative, they meet with each student throughout the year to develop a personal learning plan (PLP) to achieve their personal, education and career goals. Rochelle surveyed Year 13 students at the school about their experiences and perceptions of the PLP meetings and conducted in-depth interviews with a sample of students. Student portfolios containing documentation of the PLP meetings were also analysed.

Rochelle considered three demographic features in her analysis of the data – gender, ethnicity and goal type. Goal type was assigned according to the student's self-reported goals. Students aiming to gain endorsed certificates were defined as students with high goals while students aiming to gain NCEA Level 1, 2 or 3 without an endorsement were defined as students with low goals.

Because a majority of students at the school are Māori, Rochelle felt it was important to take a Kaupapa Māori approach to her research. Each aspect of her research, from planning to developing interview scripts, was done in partnership with Te Komiti Māori sub-committee at the school. She also hosted a series of face-to-face meetings with Te Komiti Māori, the Board of Trustees, parents and whānau, whānau teachers and students to explain the purpose of her research. "The entire research experience was very inclusive," reflects Rochelle. "It was a valuable part of the learning experience for me."

The findings

Overall, Rochelle's findings suggest that academic counselling can help support students to achieve their goals. Students found the PLP meetings useful and described them as heavily focussed on long term plans and future choices.

Rochelle discovered that for the PLP meetings to be effective students needed to feel that they have a positive relationship with their whānau teacher. They described a range of relationships with their whānau teachers. "While the strength of student-teacher relationships varied, students stressed how important it was that their whānau teacher cared about their progress, acknowledged and valued their culture and was genuinely interested in them as a person." says Rochelle. "There was a sense that relationships could still be improved to further help their achievement."

Equally important was that students felt confident in their whānau teacher’s knowledge of NCEA and university entrance requirements. Many of the students relied on their teacher’s knowledge and expertise to develop their plan and work toward their goals. “Students must feel confident in their teacher’s knowledge of NCEA irrespective of how strong or positive the relationship is. The relationship on its own is not sufficient,” notes Rochelle.

Goal setting was considered by students to be a valuable aspect of the PLP meetings but Rochelle identified a need for more explicit teaching of goal setting strategies. While only a few students reported the PLP meeting had led them to change their goals, this cohort had a significant improvement in the number of endorsed certificates achieved.

Students felt effective feedback was also critical for PLP meetings to be effective. “A significant number of Māori students and students with low goals found they had a much better understanding of their progress after the meetings and almost all low-goal students believed their whānau teacher helped them understand the ‘next steps’ they needed to take to achieve their goals,” says Rochelle.

Implications for academic counselling at Tikipunga

Rochelle has evidence which suggests whānau teachers are in a position to have a significant impact on students’ academic success. “Secondary teachers often enter the profession to teach specific subjects,” says Rochelle. “This initiative requires teachers to understand the significant role they play in their students’ overall success. My research has provided the concrete evidence that the PLP meetings are definitely worthwhile for students.”

Rochelle is using her findings to refine aspects of the academic counselling initiative in the school and ensure PLP meetings are more responsive to students’ individual needs. She suggests that meeting more regularly with students that are struggling academically is vital if the meetings are to effectively support students working toward their goals.

“I also think that it is vital to get students’ perspectives when any initiative is run in the school,” says Rochelle. “What this has taught me is that students can articulate their needs well and offer valuable insight for researchers.”

Growing teacher knowledge through effective teams



Kim Henry

Associate Principal in charge of technology at Northcross Intermediate School in Auckland.

Kim knew her team of technology teachers at the school were doing something right. Longitudinal data collected by Northcross Intermediate using Dr Vicky Compton’s *Technology Indicators of Progression* revealed that students were achieving well when judged against *The New Zealand Curriculum*. She knew the importance of working in teaching teams to raise student achievement was often debated and wanted to use research to explore the features of successful teaching teams.

“There is increasing international acceptance that, in this knowledge driven age, those teachers working in isolation will struggle to synthesise the vast amounts of information required to ensure students are successful,” says Kim.

Research opportunity:

To find out, if teaching teams are to be successful in raising student achievement, what makes them effective and how do they do it?

The research

Kim conducted a mixed-method study to investigate knowledge management within effective teaching teams. “I wanted to identify how tacit knowledge, the knowledge of experience, becomes explicit knowledge that can be used by others in the team,” reflects Kim.

Working with a team of ten technology teachers at Northcross Intermediate School, Kim conducted a series of in-depth interviews to gain insight into teachers’ interactions with others in the team. Each teacher also kept a journal of interactions over a period of two days. “The journal provided a wealth of insight and information into interactions between teachers and others in the school,” says Kim. “They tracked everything, whether it was a text message, a passing “hello” to a colleague or an in-depth discussion with a student.”

The data produced were analysed using NodeXL (an Excel template), which enabled interactions to be drawn as social networks that could be easily understood. There were 324 recorded interactions over the two days, with the majority taking place before and after school. 122 were under five minutes long, and 57 of the interactions were recorded by the group as chat or gossip.

The findings

The data collected through the interactions clearly reinforced the data collected in the interviews and questionnaires – that the group agreed the most effective features of the group were social capital (the social relationship web within the group), knowledge and community.

What Kim found was that knowledge and the sharing of accurate knowledge was vital to the success of the team. Accurate knowledge was built and maintained by the team through shared activities and artefacts, as well as through the team’s investment in social capital. “Literature suggests that new knowledge is created through talking and interacting with other people,” says Kim. “The teachers’ constant interaction allowed them to build an accurate knowledge base.”

"Whether it was a planning document, a group activity or an assessment, they shared their knowledge through every mutual interaction," says Kim. "And because the teachers invested trust in each other, their interactions were open and honest."

The group of teachers involved in Kim's study worked as a team and had formed a highly developed community which was inclusive, supportive, reflective and driven by the need to create, use and manage knowledge that they could pass on to their students. The ability to be critical of both themselves and each other was important to them and they were not afraid to ask for help or go to others to actively seek ways to improve how and what they were teaching.

Building knowledge at Northcross Intermediate through effective teaching teams

Kim believes that teachers operating on their own with such a demanding curriculum can never be successful. Doing her masters research has provided her with a deeper understanding and appreciation for how much teachers value knowledge and strive to find it. "This research has shown me that it is vital for teachers to work in teams if we are to have an impact on student achievement," she says. "Isolated pockets of success aren't enough. We need to invest in social capital in order to share and grow accurate knowledge. We can start by ensuring we open our classroom doors, provide and receive critique from others, and accept and offer praise in an open and honest way."

Completing her Master of Education has ignited Kim's enthusiasm for research and she is eager to work with other teaching teams within the school to further understand the impact they have on student outcomes and work with teams to identify what they can do to build knowledge that supports student achievement.

"Professional Learning Communities are vital," says Kim. "But these do not develop without nurturing. Strong communities allow teachers to grow knowledge, skills and confidence, which in turn increase the opportunities for success in their students."

"Through developing social capital, members feel collective responsibility for the success of all students – not just the ones they teach directly. This research has shown me that through using data and ensuring teachers take responsibility for that data, the group can find new and innovative ways to improve learning for students."

To find out more about how you can apply for a Woolf Fisher Lead Teacher Masters Scholarship visit www.auckland.ac.nz/scholarships



The late Sir Woolf Fisher, co-founder of Fisher and Paykel and chairman of New Zealand Steel, was a passionate supporter of education in New Zealand. In 1960 he founded the Woolf Fisher Trust for the advancement and enrichment of scientific and general education in New Zealand through a range of prestigious fellowships and scholarships to acknowledge and encourage excellence in educational leadership and in-school practice.

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