

Doing Things Differently: The Outcomes of Teachers Researching Their Own Practice in Teaching Writing

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In this study we investigated whether teachers' pedagogical and content knowledge of writing would increase as an outcome of teachers taking a research lens to their practice to raise students' writing achievement. Using student achievement data as a baseline, teachers examined and refined their practice using an inquiry process. The study took place over a two-year period and involved over 20 teachers from six low socio-economic urban primary schools in Auckland, New Zealand. Literacy leaders in the schools and four university researchers also took part in the inquiry project. Data collected from teachers' records, researchers' field notes, and transcripts from focus groups of teachers and literacy leaders indicated enhanced pedagogical and content knowledge of writing, as well as marked gains for students on a standardized test of writing. This study contributes to research demonstrating that, through researching their own practice and teaching targeted to students' strengths and needs, achievement in writing can be raised.

Key words: writing, teacher research, teacher inquiry

Cette étude visait à répondre à la question suivante : lorsque des enseignants perfectionnent leur connaissance du sujet ainsi que de sa pédagogie et à travers la pratique réflexive, les compétences en rédaction des élèves s'en trouvent-elles améliorées? Les chercheurs ont choisi des enseignants qui, provenant d'un ensemble de six écoles primaires et intermédiaires urbaines de quartiers défavorisés de la Nouvelle-Zélande, avaient eu recours à la pratique réflexive sur une période de deux ans. Les données colligées à partir des dossiers des enseignants, de groupes de discussion, de notes de travail sur le terrain et de modèles de registre d'objectifs indiquent qu'ils avaient amélioré leur confiance en eux et leurs connaissances au sujet de l'enseignement de l'écriture, surtout en ce qui a trait à l'utilisation de l'évaluation formative et de l'acquisition d'un métalangage au sujet de l'écriture. À deux exceptions près, leurs élèves ont obtenu des résultats nettement meilleurs à un examen standardisé national d'écriture, ce qui semble militer en faveur de la pratique réflexive chez les enseignants. Cette étude va dans le sens des recherches qui démontrent qu'en réfléchissant à leur pratique et en alignant leur enseignement sur les points forts et les besoins des élèves, les enseignants peuvent améliorer le rendement de leurs élèves en écriture.

Mots clés : enseignement de l'écriture, recherche pédagogique, pratique réflexive chez les enseignants

Student achievement levels in writing have been a concern in New Zealand for some time, especially for schools in low socio-economic, urban areas. The present study is based on data from a two-year project in Auckland to raise student achievement in writing in a cluster of urban schools. A previous study in this cluster had reported not only low student achievement but a paucity of teachers' pedagogical content knowledge about writing and their low levels of confidence in the teaching of writing (Limbrick, Buchanan, Goodwin, & Schwarcz, 2005). In this article we report on the achievement of an inquiry model that focused on increasing teachers' pedagogical practice through enhancing their knowledge about writing. It also considered student writing achievement on a standardized test used in New Zealand.

CONCEPTUAL FRAMEWORK

This study is bounded by two theoretical frameworks. The first, building on a substantive body of research, posits teacher inquiry as integral to teacher knowledge about teaching (Cochran-Smith & Lytle, 1993). In such a framework, teachers research their own practice, generating new

knowledge by identifying and responding to dissonances within their practice (Timperley, Wilson, Barrar, & Fung, 2007, p. 7). As Cochran-Smith, and Lytle (2001, p. 49, as cited in Whitney et al., 2008) argue, in taking such "an inquiry stance, teachers 'make problematic their own knowledge and practice as well as the knowledge and practice of others and thus stand in a different relationship to knowledge'" (p. 206). We embraced a model of professional development in which teachers engage in a *Teacher Knowledge and Inquiry Building System* (Timperley et al., 2007), which conceptualizes effective teaching and learning as problem solving and reflection (Robinson & Lai, 2006).

The second framework guiding this study conceptualizes writing, within socio-cultural theories, as a communicative process. It is grounded in a substantial body of research and professional development in writing over 30 years which has influenced current inquiry approaches to writing in many countries today. For instance, Whitney et al. (2008) argue that researchers "Emig (1971), Britton (1975), and Flower and Hayes (1980)" (p. 201) are forerunners to process-oriented research and practice that has informed the influential United States National Writing Project. In the context of the present study, the theoretical framework of Graves' (1983) process writing has also influenced pedagogical approaches to writing. This rich body of research has provided a conceptual base for the research that we describe in this article, in which writing is theorized as a "complex social and cognitive activity that can be taught and learned" (Blakeslee & Fleischer, 2007, pp. 30-31).

Although we did not directly model our work of the National Writing Project, the teachers in the present study interrogated their practices and examined their own teaching through the lens of their students' writing achievement. By adopting an inquiry framework, they endeavoured to make a difference to their students' achievement outcomes by "do[ing] things differently" (Timperley, 2007, p. 7).

LITERATURE REVIEW

Concerns about the status of student achievement in writing have been reported nationally and internationally (Dockrell, 2009; Dyson & Freedman, 2003; Flockton, Crooks, & White, 2007) with disparities in achievement of particular concern. Arguably, because student achievement has

been strongly linked to teacher practice (Hattie, 2009; Nye, Konstantopoulous, & Hedges, 2004), student achievement in writing is the outcome of quality teaching of writing. Twenty years ago Shulman (1987) acknowledged the pivotal role of teachers' content knowledge, and particularly pedagogical content knowledge, in effective practice. Since then, several studies have examined the characteristics of teachers identified as expert or exemplary teachers of literacy, particularly in reading (Parr & Limbrick, 2010; Pressley, Allington, Wharton-McDonald, Block, & Morrow, 2001; Wray, Medwall, Fox, & Poulson, 2000). Common to most of these studies is the argument that the achievement of students, traditionally viewed as "at risk," is positively related to teachers' knowledge. Although Phelps and Shilling (2004) note that connections between teachers' knowledge and students' achievement are still inconclusive, it is generally agreed that effective teachers have knowledge about their students, content knowledge of the subject, and pedagogical content knowledge, including explicit and purposeful teaching. Referring specifically to reading, but of relevance to writing, Phelps and Shilling noted that good teaching depends on "teachers' knowledge of the subtleties of word and text structure" (p. 35).

The complex nature of writing, and learning to write, can be challenging not only for students, but also for teachers. Many teachers are frightened of writing and unsure, themselves, about the process of writing, or how to integrate new knowledge about writing into their classroom practice (Fleischer, 2004). Teachers frequently do not have the meta-language for writing, thus finding it difficult to articulate their understandings about the forms, purposes, and process of writing. Teachers do not always know what they need to know. A paucity of teacher knowledge has been implied as a factor in students' difficulties in writing (Glasswell, Parr, & McNaughton, 2003; Labbo, Hoffman, & Roser, 1995).

Whereas there is a large body of research on the pedagogical knowledge required for reading (e.g., Farstrup & Samuels, 2002; Fielding-Barnsley, & Purdie, 2004), the content knowledge for writing, and the pedagogical content knowledge (PCK) has been less defined, and as Phelps and Schilling (2004) state, "teachers need to know content in ways that differ from what is typically taught and learned in university courses" (p. 32). Little empirical data, however, exists on teachers' con-

tent and pedagogical content knowledge in relation to writing outcomes. Parr (2009) argues that, in regard to writing, "there is a dearth of research that suggests what such (PCK) might be . . ." (p. 6), and further states that "the field is decidedly ecumenical in terms of epistemology" (p. 5).

Teachers' knowledge and confidence about teaching writing, however, increases when teachers engage in professional development that encourages them to question their beliefs and practices, "looking below the surface of their teaching" (Fleischer, 2004, p. 26). Borko (2004), citing the National Writing Project, noted that teachers reported that professional development, situated in their own writing and classroom practices, increased their time spent on writing instruction and the use of exemplary practices. Likewise, several studies have claimed that more meaningful discussion, and deeper insights into the teaching and assessment of writing, eventuate when teachers interrogate and moderate student writing achievement closely (Timperley & Wiseman, 2003; Limbrick, Knight, & MacCauley, 2005). Furthermore, a substantial number of studies have demonstrated that, when teaching is based on evidence of students' achievement and targeted to needs, their achievement can be raised (Buly & Valencia, 2002; Kennedy & Shiel, 2010; Lai, McNaughton, Amituanai-Toloa, Turner, & Hsiao, 2009; McNaughton, MacDonald, Amituanai-Toloa, Lai, & Farry, 2006; Timperley & Parr, 2004). Other authors (e.g., Mertler, 2009; Robinson & Lai, 2006) have argued similarly that effective teaching requires teachers taking on a research role. As Robinson and Lai (2006,) state, "there are good reasons why a research role should become a more important part of teachers' professional lives. Perhaps the most compelling reason lies in the nature of good teaching. Good teaching is reflective, based on high quality information and constantly improving" (p. 5). Thus we designed, as the framework for this study, a professional development inquiry model in which teachers researched their own practices in teaching writing.

CONTEXT FOR THE STUDY

The cluster of schools participating in this research was situated in a low socio-economic area with a high concentration of indigenous Māori and students from the Pacific Islands. In New Zealand, these students are

disproportionately represented in schools reporting low achievement (McNaughton et al., 2006). Limbrick et al. (2005) previously reported that teachers lacked confidence in their knowledge of writing processes and the teaching of writing; few routinely used writing assessment tools recently developed by the New Zealand Ministry of Education (2003) to improve writing assessment. Furthermore, as has been reported elsewhere (Timperley, 2007), little evidence exists of teachers using assessment data to inform teaching or to measure the effectiveness of their own pedagogy for the teaching of writing.

We collaboratively developed a research plan with teachers who were nominated as literacy leaders in these schools to improve teachers' capacity to analyse students' writing and use the evidence to inform teaching. In this collaboration, we agreed that a major aim would be to enhance teachers' knowledge about the principles and practices of effective pedagogy for writing to raise student achievement in writing.

Baseline writing achievement using *Assessment Tools for Teaching and Learning - asTTle* (Hattie et al., 2004) confirmed exceptionally low levels in the first year of our study across all classrooms and all schools. Another assessment tool currently used in New Zealand is the *English in the New Zealand Curriculum: English Writing Exemplars* (Ministry of Education, 2003), which are annotated samples of writing in a range of genre representative of writing at a specific level of the curriculum. Teachers' knowledge in using these *Exemplars* for assessment was variable, as well as their confidence and ability to analyse and interpret the *English Writing Exemplar* indicators. Prior to the start of the project, we, therefore, conducted school cluster-wide professional development workshops in using the *Exemplars* as a formative assessment tool. In these workshops, we used the *Exemplars* as benchmarks to analyze students' use of surface features (such as spelling and punctuation) and deeper features of writing (e.g., ideas, language structure, and sense of audience). Through moderating and justifying their assessment in reference to the curriculum level indicators from the *English Writing Exemplars*, teachers developed a meta-language with which to interrogate students' writing and their own practice.

We initially received funding from the Teaching Learning Research Initiative (TLRI) for a one-year research partnership between the schools

and university researchers. Mid-way through the first year, we found that classroom assessment and anecdotal observations suggested that students were more engaged in writing and teachers were more enthusiastic and confident in their approaches to teaching writing. Questions began to be asked as to what would happen in the future. How could apparent gains in student achievement and the shifts in teacher knowledge and attitudes to the teaching and learning of writing be sustained? Furthermore, teachers who had not been included in the project were asking to become involved in what was seen to be a demanding yet satisfying process.

Consequently, we successfully gained a second year of funding. In consultation with the schools' principals, literacy leaders, and participating teachers, we devised a mentoring programme to ensure the sustainability of the initiative. Teachers participating in the inquiry in the first year became mentors and peer collaborators with the "new" teachers from year two, helping them to consolidate inquiry as a pedagogical principle in the schools. We established a model similar to "teachers teaching teachers," described by Borko (2004) as an integral component of the National Writing Project.

In the following section, we describe the inquiry professional development model along with a report on the particular aspect of the project which anticipated that, through taking a research lens to their practice, teachers' confidence in and pedagogical knowledge for teaching writing would be enhanced. We expected that teaching would become targeted more specifically to students' strengths and needs, leading to raised achievement in writing.

METHOD

Sites

We invited six primary schools in a low socio-economic cluster of urban primary schools in the southern part of Auckland to participate. We signed partnership contracts committing both schools and researchers to the aims of the project.

Participants

We invited one teacher in each of six schools in each of year 4 (aged 8/9), year 5 (aged 9/10), and year 6 (aged 10/11) classes, and year 7 (aged 11/12) and year 8 (aged 12/13) in two schools with intermediate classes (upper elementary) to participate. Year 2 students (aged 6/7) were included in the study but not reported on in this article because we could not report writing achievement using a standardized writing assessment tool. We also included teachers designated as literacy leaders in the school. In each school in each year of the study, one teacher from each of years 2, 4, 6, and 8 was involved. Twenty teachers participated in each year of the study (only one school had year 2 to 8 classes, and one school was an intermediate school with only year 7 and year 8 classes).

In the second year of the study many of the teachers from the first year continued the inquiry process in their own classes while acting as writing mentors to “new” teachers of similar level classes, and contributed to the forum discussions. Data from the classes in which they taught were not included; however, these data were included in the student achievement data.

Professional Development Inquiry Activities

Timperley et al.’s (2007) model of research-focused inquiry illustrates the inquiry process that we worked through in partnership with teachers (see Figure 1).

This process, similar to the “blueprint for sustained professional development” (p. 26) described by Fleischer (2004), supported teachers in “reflecting deeply on their own backgrounds and belief structures” (p. 27) to identify their own strengths and needs suggested by close examination of their students’ achievement. Throughout this reflective inquiry process, teachers started to “articulate their tentative knowledge – both for themselves and for others in their community of learners” (p. 27).

School-based Meetings

We held school-based meetings in each school twice in each of the four terms in year one of the study, and once a term in the second year. We worked with teachers to set goals for their students’ learning based on an analysis of patterns of their students’ writing achievement. Writing

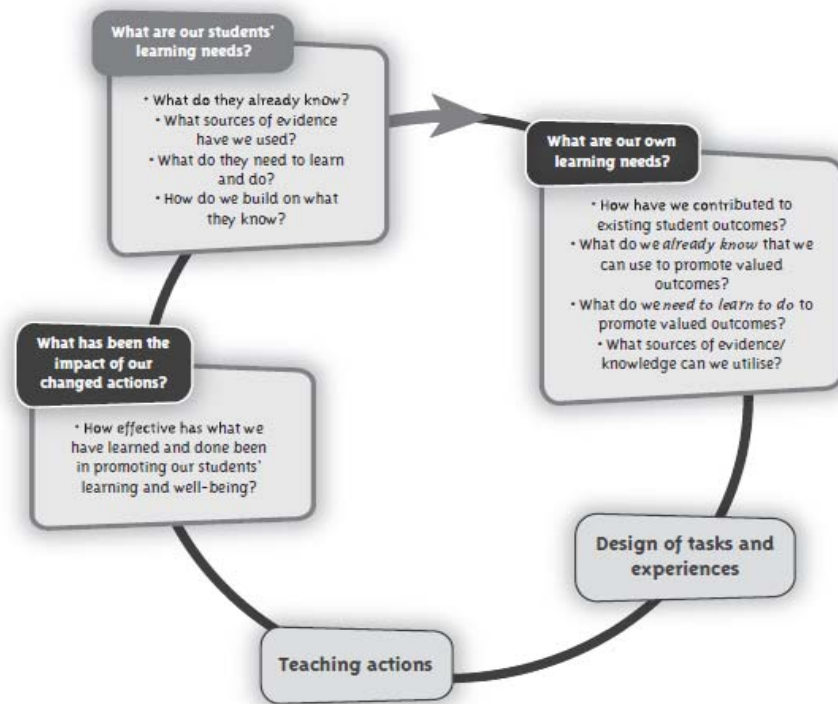


Figure 1. *The Teacher Inquiry and Knowledge Building System Cycle* (Timperley, H., Wilson, A., Barrar, H., & Fung, I., 2007. *Teacher professional learning and development: Best evidence synthesis iteration [BES]*. p. xiii).

instruction in each teachers' class varied, encompassing a range of genre, according to the curriculum focus. Discussion centred on how evidence from the writing samples revealed strengths and gaps in students' writing in relation to the indicators of the *English Writing Exemplars*.

English in the New Zealand Curriculum: English Writing Exemplars: A Benchmark for Teacher Judgment

These *English Writing Exemplars* (Ministry of Education, 2003) were developed as part of a national assessment strategy. There are 75 written language exemplars, each one annotated to demonstrate achievement in relation to a particular curriculum level. Each *Exemplar* includes a matrix setting out indicators of student achievement for each curriculum level. The *English Writing Exemplars* provide a reference point to support teacher judgment about their own students' writing. Teachers examined their students' writing in relation to the *Exemplars* for what they revealed about their own practice and knowledge about writing and the teaching of writing. They were encouraged to identify the "next steps": set goals for their students and for their own teaching, build their knowledge base, and monitor the impact of their actions. Teachers recorded their decisions using the template outlined in Table 1 to document evidence, goals, and outcomes that subsequently became the framework for discussion with the researchers.

To support this inquiry research, we supplied resources, professional readings, and research literature to support teachers' knowledge about writing purposes, forms, and pedagogical approaches. The teachers discussed and shared the professional readings and resources that best supported the development of their own goals. The research became increasingly relevant as teachers worked first to identify and subsequently clarify their own professional goals and finally to investigate their practice.

Professional Learning Circles

The teachers and literacy leaders established professional learning circles within the schools, in addition to the regular discussions among the literacy leaders, teachers, and university researchers. These experiences enabled teachers to reflect on the data and their own teaching practice, to consider student outcomes, to examine research literature, and to interrogate challenges and successes.

Table 1: Template for recording data based on assessment, teacher reflection and teaching decisions

Class Writing Profile				
	Children		Teacher	
Strengths (based on Writing Exemplars)				
Needs (based on Writing Exemplars)				
Focus Area/s				
Select 3 possible focus areas for teaching			Why have you selected them?	
a)				
b)				
c)				
Final choice (in discussion with Research team)				
Research Process: Timeline/Action Plan/ Reflections				
When	What	Why	How	*Issues that have arisen *Comments

Inter-school Meetings

On four occasions in each year, we met with teachers and literacy leaders from all schools across the cluster as a whole group. At these inter-school meetings, teachers discussed their foci, teaching developments, and concerns in relation to student achievement, as well as their explorations and insights into the writing process and pedagogies for writing. Throughout this reflective inquiry teachers started to articulate their tentative knowledge – both for themselves and others in their community of learners.

DATA COLLECTION AND ANALYSIS

We collected data to examine growth in teachers' knowledge of writing and writing pedagogy and to learn whether changes in student writing achievement occurred. To study growth in teacher knowledge and practice, we drew on data collected from several sources.

Data Collection

- (1) *Goal Recording Templates*. Templates recorded teachers' goals and action plans based on identification of their students' strengths and needs, and concomitant teachers' strengths and needs. All teachers completed these goals and action plans; they were discussed at in-school meetings and filed as part of a portfolio where each teacher documented his or her goal setting, actions, and reflections (see Figure 1).
- (2) *Field Notes*. We recorded our field notes from school-based meetings with teachers as diary entries during, or very soon after, each meeting. These included key ideas discussed, recommendations for refining classroom practice, and reflections on teachers' teaching and the research process.
- (3) *Literacy Leaders' Reports*. The Literacy Leaders gave us their milestone reports which the funding body (TLRI) required twice each year during the two years of the project. These reports summarized changes in pedagogical practice, student achievement, and the engagement of teachers in professional discussion within Quality Learning Circles in their respective schools.
- (4) *Transcripts from Focus Group Discussions*. These transcripts recorded focused discussions held at inter-school meetings on two occasions in both years of the project. These meetings, held after school for two hours, provided an opportunity for specific groups to meet together, for example teachers of children in year 6. We audio-recorded the group discussions in their entirety.

Data Analysis

We analysed data using a constant comparative analysis (Le Compte & Preissle, 1993, as cited in Mutch, 2005, p. 177). This process is iterative and recursive, where initial codes are subsequently coded and constantly

compared to develop and define their properties. Eventually we, as a group of four researchers, sorted the codes into coherent patterns or themes. These themes related to (a) understandings of writing and writing pedagogy, (b) a meta-language for writing in teacher discourse in professional forums, and (c) reflective statements indicating the impact of research and resources on the teaching of writing.

Student Achievement

We assessed writing using a nationally developed writing assessment tool: *Assessment Tools for Teaching and Learning – asTTle* (Hattie et al., 2004). This tool was standardised and normed for New Zealand curriculum Level 2 (year 4 students aged 8/9) and above. The *asTTle* analyzes cognitive aspects of writing (deeper features) and the conventions of writing (surface features) in a range of genre. To maximize consistency in description, we selected this tool as the assessment focus for each year group and each year of the project.

We obtained baseline data at the beginning of each year using *asTTle Writing* (Hattie et al., 2004) for years 4, 5, 6, 7, and 8. Teachers administered the assessment tasks, which were analyzed by a research assistant, a teacher trained in the marking of the samples. We, as the research team, cross-marked a 10 per cent sample of the marked writing. The small number of discrepancies in scoring (in less than 10 of the moderation sample) of more than one sublevel were re-marked and moderated¹ until we reached consensus, a process that was used to clarify application of the criteria to all the writing.

RESEARCH FINDINGS

This section presents findings from the analysis of teacher data. These findings were grouped into three categories: assessment of writing and use of evidence to inform teaching, developing a meta-language for writing, and knowledge of research on, and resources to support writing. This is followed by a brief overview of student achievement gains be-

¹ Moderation refers to the process by which markers justify their decision and come to a shared agreement of what a particular piece of writing demonstrates in terms of a level. It is a process widely used in New Zealand for the assessment of writing when using the *English Writing Exemplars*, or *asTTle*.

cause raising achievement in writing was the primary aim of the overall study. Increased gains for students' writing achievement generally exceeded national expectations.

Teachers' Confidence and Knowledge of Writing and the Writing Process

Assessment of Writing and Use of Evidence to Inform Teaching. Assessment became integral to, and a precursor of, writing instruction. Field notes from early meetings between teachers and researchers revealed that varying levels occurred in knowledge of writing and assessment of writing. Most teachers had little meta-language to describe samples of writing discussed at initial meetings. Consequently they were not able to give students information about what they had done, and what they needed to focus on to improve. Teachers viewed the *English Writing Exemplars* as a tool for reporting progress rather than as a resource to be used for diagnosis and determining new learning. Teachers reported limited experience with the range of assessment tools available to New Zealand teachers, and teachers' general understanding of writing was also limited, including the progressions within writing, and the ability to communicate this knowledge coherently to students.

By the first mid-year forum, however, the group of Literacy Leaders commented on the increasing confidence with which teachers articulated what they knew about writing and what they were teaching. One literacy leader noted that:

Teachers are more confident in using their professional knowledge to assess the levels of children's writing against the Exemplars and at our school we have moderated across the school several times now and the teachers have a better understanding of the development stages at the different levels. Specific note is being taken of the areas of development needed and this information informs the teaching planning cycle. (Literacy leader, first year, Milestone report)

Use of the *English Writing Exemplars* resulted in greater confidence in making judgements about student writing and forming appropriate expectations for students at different levels. The moderation process in which teachers engaged within their schools developed a shared understanding of the writing levels, and they increased in their ability to describe and justify aspects of student writing in terms of an achievement

level. This ability was apparent in the comments discussed and recorded in the teachers' portfolios towards the end of the first year. Field notes over the second half of the year recorded a focus on teacher identification of surface and deeper features, as well as their increased understanding of the language features and structure of different texts. Most teachers reported an increased confidence in providing students with specific and relevant feedback and feed forward, as exemplified in the notes of one teacher.

Yes, teaching is more directed and purposeful because gaps are able to be identified. Comparison of samples with Exemplars informs teaching practice with specifics for future teaching / learning. It's great to have the 'befores and afters' (writing samples) to enable the kids to be part of scaffolding themselves. (Teacher, first year, Field Notes)

At the inter- school focus group meeting at the end of the first year, teachers reported that the use of the *English Writing Exemplars* had become a topic for staff meetings, along with Professional Learning Circles and meetings between researchers and teachers. Within these schools teachers developed a shared understanding as to the breadth of each achievement level. Teachers were increasingly confident in describing and justifying the learning evident in a piece of work. The process of developing a shared understanding of quality work, and possible paths to improvement, are explained by this teacher.

What we've been doing at staff meetings, those of us who were involved, was bring along samples of the children's work . . . and how you got there. The professional discussions that went on were so valuable . . . it was a way of dispersing what we were learning and practising . . . getting those out to the rest of the staff. . . .(Teacher, first year, Inter-school forum focus group)

Teachers used the indicators of progress of the *English Writing Exemplars* to clarify for students exactly what they had to focus on to improve their writing. At meetings with researchers, several teachers described how they were using the indicators of the Exemplars to clarify, and make visible, goals for learning based on their own students' strengths and learning needs. By the first forum of the second year, many teachers talked about a greater understanding of the role of assessment resulting

from using the *English Writing Exemplars* regularly to help them identify and describe specific “next learning steps.” At this same meeting teachers reported that increasingly their students were able to set their own goals based on feedback given to them. One teacher commented that her students were becoming more aware of what they knew about writing, and what they needed to know.

Developing success criteria with the children and establishing learning intentions related to their needs has helped them (the students) become more focussed and is helping them develop a working knowledge of the criteria. Focussing on a particular aspect that has been identified, for example descriptive writing, and [sic] has helped the children focus more, rather than have to attend to everything at once. (Teacher, year 2, Interschool forum focus group)

In school-based meetings, teachers regularly reported that they were assessing students more consistently and meticulously, using assessment data for formative purposes not just summatively as previously. Evidence from student achievement data had become an integral part of planning, teaching, and assessment. One teacher described this procedure as taking snapshots of the students’ writing throughout the year, data which she then put on a spreadsheet: “. . . lo and behold there was a big gap [in a specific aspect of achievement] here for the whole class” (Teacher, year 2, Field notes).

This information, she explained, became the basis for looking at the overall focus of her programme. It helped her identify concepts that all students needed to address and which she needed to teach explicitly. Literacy Leaders reported that teachers were using student data not only to inform their students’ learning, but also to interrogate and critique their own teaching performance. For example, one Literacy Leader reported that:

Teachers are more self aware of themselves; they are identifying their own strengths and weaknesses, as well as the children’s. We are becoming aware that if a child has not achieved at a certain level it may be because we have not taught it effectively. (Literacy Leader, year 2, Milestone report)

Developing a Meta-Language for Writing

Teachers increasingly expressed awareness of the importance of learning conversations with their students and of encouraging conversations among students. During meetings with university researchers during the second half of the first year and at the beginning of the second year, they were increasingly able to articulate understandings about writing, and to talk about a sample of writing in terms of specific language features. The development of a common terminology arose through their continued study and use of the *English Writing Exemplars*. The teachers reported identifying students' achievements and gaps confidently, becoming more focused in their use of specific vocabulary when modelling or conferencing with their students. There were many instances reported of this meta-language also being adopted by the students themselves, as illustrated by this teacher's comments:

"Now we know what we are talking about; we know the terminology and the children know the terminology so that we can talk about writing. . . this has led to a greater excitement about writing. (Teacher, year 2, Field notes).

Another teacher of a year-6 class commented that:

The purpose of [my] goal is to examine ways that the 'Exemplars' can be used by the learner as well as the teacher. I want to develop a child-friendly rubric that gives the student a framework in which to critique a given text, and to highlight its features, so that they will be able to use these features in their own writing. (Teacher, year 1, Field notes)

Teachers reported changes to pedagogy, including classroom organization. For example, during meetings with researchers, the focus of discussion increasingly centred on how teachers were teaching to specific needs. Frequently comments in our field notes referred to the need for organizational structures that had predictable routines and enabled a teacher to focus on an instructional group. One junior-school teacher developed a task board to support student self-management. A task board visually describes the writing-related activity that students are expected to be engaged in at any one time. Other teachers in her school subsequently adopted task boards, as did teachers in other schools in the clus-

ter. Another teacher described how she used data from the *Writing Exemplars* as the basis to gather students in groups for targeted teaching. Other teachers commented on the need to provide explicit teaching of particular aspects of writing. For example, they identified the positive, motivational impact of purposeful modelling and conferencing focused on specific issues, as well as the publication of students' writing. The following teacher's comment exemplifies the teachers' emerging cognisance:

When we look at criteria for writing we can see what is, or is not, happening in our planning and therefore identifying that why a child is not achieving at a particular level is maybe because we haven't actually taught it or taught it well enough. (Teacher, year 1, Interschool forum focus group)

Through their comments at the final forum, four teachers indicated that they learned that there was more to a writing programme than "writing about what you did in the weekend." They were aware that they could draw on a greater knowledge of writing and the progressions within writing and consequently were better able to construct purposeful learning pathways for their students. As one teacher exclaimed: "*I have just realized that [the research project] is all about me . . . not about the children. I am the one who has to change if we are to improve students' achievements*" (Teacher, year 1, Field notes).

Research and Resources to Support Effective Teaching of Writing

Finally, all teachers demonstrated that they had a wider awareness of resources to support their pedagogy, including the research and professional articles discussed within their learning circles. Resource books, such as *Effective Literacy Practices in Years 1 to 4* (Ministry of Education, 2003) and *Effective Literacy Practices in Years 5 to 8* (Ministry of Education, 2006), which became topics of study, clearly influenced practices. For example, one teacher described how "the deliberate acts of teaching" in relation to writing, as defined in Ministry of Education (2003, p. 76) were incorporated into her writing instruction as a result of discussions with the researchers. Another noted the importance of carefully chosen, relevant, research-based, and manageable articles as the basis of school-based professional learning circles which, in the words of one teacher,

“led to wonderful professional discussion. They provide opportunities to link my practice to theory” (Teacher, year 2 Interschool forum focus group).

Student Achievement

The standardised student achievement data, based on *asTTle*, at the beginning of the project confirmed low levels of achievement in all schools across years 4, 5, 6, 7 and 8, relative to national expectations. These data suggest that, for middle to upper primary students, progress in previous years had been persistently below the national expectations of at least one *asTTle* sub-level each year. As noted earlier, only data from years 4, 5, 6, 7, and 8 are reported in this article. As a result of high student and teacher mobility, student data could not be reported across two years. Data are reported separately for each year (see Table 2).

Data on *asTTle Writing* reported in Table 2 show a greater than expected shift, according to national norms, in student achievement in writing in the participating schools. In the first and second years, the mean raw score gains for the students in participating classes was 56 and 61 respectively, double that expected from national norms: The *asTTle* manual reports a mean gain of 27 should be expected across year groups. Some classes in our study gained three times greater than expectations for a year. Furthermore, there are statistically significant differences in both years in writing achievement from assessment at time 1 to assessment at time 2 (First year: $t(94) = 5.493$; $p < 0.001$; Second year: $t(382) = 2.450$; $p < 0.001$). Effect sizes were $d = 0.45$ and $d = 0.62$ for the first and second year respectively. These significant differences are apparent within each year group with the exception of year 7 in both years of the study and year 8 in the second year of the study (see Table 2). As discussed later, there may have been contextual factors that affected the lower rate of achievement in these classes. Collection of data from students was problematic during the first year leading to small cell sizes. Consequently results for the first year are not robust, whereas results from the second year are more so.

There was great variability in student achievement, especially in the first year with standard deviations of 110.8 and 111 for time 1 and time 2. In the second year, although variability was high at the beginning of the

year (S.D = 115.9), the final assessment suggests that the disparity in achievement had reduced (SD= 76.3).

Table 2: Gains for means, in comparison with expected gains according to national means for asTTle for each year group, T-tests of significance and Effect Size from time 1 to time 2 in the first and second years of the project.

		First year			Second year		
	asTTle means for national normative sample	N	Mean gains	T-test significance	N	Mean gains	T-test significance
Year 4	28	35	46	t (34)=2.380, p<0.023	152	101	t (151)=11.777, p<0.001
Year 5	22	8	80	t (7)=4.586, p<0.01	70	68	t (69)=8.337, p<0.001
Year 6	14	17	80	t (16)=4.245, p<0.001	78	46	t (77)=3.571, p<0.001
Year 7	18	15	21	t (14)=1.300, p=0.215	37	11	t (36)=0.545, p=0.589
Year 8	54	20	44	t (19)=2.521, p<0.05	46	16	t (45)=1.322, p=0.193
Mean across year groups	28	95	56	t (94)=5.493, p<0.001	383	61	t (382)=12.452, p<0.001
Effect size Cohen's d		95	d = 0.45		383	d = 0.62	

In summary, not only has teachers' confidence in their pedagogical content knowledge of writing increased but this knowledge had a positive impact on student achievement.

DISCUSSION

The significant impact that teacher knowledge has in determining all aspects of teachers' approach to teaching has been acknowledged for some time. Comber and Kamler (2005) have argued that to be effective, instructional decisions should be based on an understanding of the writing process shaped by observations and interactions with students. Ball and Bass (as cited in Robinson, 2003) also claim that, with sufficient knowledge, and the ability to use that knowledge to assist learning, teachers can identify or notice gaps or inconsistencies in student learning.

Our research has demonstrated that teacher knowledge was enhanced when they adopted an inquiry stance (Cochran-Smith & Lytle, 2009). Through examination of students' writing samples, teachers began to notice gaps not only in their students' learning but also in their own knowledge. They became more knowledgeable in identifying their students' needs to achieve the next steps in writing. Discussions with researchers and colleagues facilitated deeper understandings about the writing process and enabled teachers to make informed decisions for planning and teaching (Fleischer, 2004). Furthermore, these teachers developed a meta-language to discuss writing and articulate a rationale for the pedagogical approaches they employed. Similar outcomes have been reported by Limbrick, Knight, and McCaulay, (2005) and Timperley and Wiseman, (2003).

Teachers' understanding of the purpose of, and criteria for, assessing writing became evident. Student data routinely became the basis for teaching decisions. Increasingly teachers' comments revealed their perception of assessment as ongoing and formative, rather than solely for summative purposes. Increased knowledge of the purpose, structure, and language features of different texts, and of surface and deeper features of writing, was reflected in conversations and more specific feedback on students' learning. Greater confidence in teaching writing, and

implied contingent knowledge have been an outcome for teachers in this project. Teachers, through reflection on their own teaching, have become more aware of the central, and critical, role they play in their students' learning (Hattie, 2009). Rather than viewing students as having deficits, they acknowledged that if a student was not learning, the reason may lie in their teaching.

Finally, there was evidence that most students increased in their writing achievement, with students in years 4 to 6 making gains greater than expected for their normative cohort. After teachers had completed their learning circles that focused on the teaching of writing, we found that students' test scores had improved. We do not have causal data, but our results give credence to the understanding that students' gains are the result of more knowledgeable teachers, targeting their instruction to students' needs. The lack of equivalent progress for the students in year 7 and year 8 in two schools is of concern. Explanations for this divergence of outcomes can only be tentative. One of the schools, an intermediate school (years 7 and 8 only) was undergoing organizational and leadership problems which could explain the outcome. However, it may be also that patterns of low student achievement cemented for years 7 to 8 are harder to shift. Nonetheless, outcomes from this project contribute to the evidence from a number of studies demonstrating that when teachers take an 'inquiry stance' with their practice (Cochran-Smith & Lytle, 2009) students' achievement can be raised (e.g., Borko, 2004; Buly & Valencia, 2002); Lai et al., 2009; Timperley et al., 2007).

Implications

There are implications from this study for professional development in pre-service and in-service teacher education in that teachers need to see their practice as integral to student achievement. Insights into processes of teaching and learning of writing enabled these teachers to interrogate and problem-solve their practice (Fleischer, 2004; Robinson & Lai, 2006). As Whitney et al. (2008) have asserted, professional development should be "less about presenting teachers with a new set of strategies than it is about encouraging them to interrogate and modify strategies" (pp. 227-228) that are already part of their practice. In Timperley's (2007) words, "Professional development can make a difference . . . but only if the fo-

cus is on how teachers can make a difference to their students if they do things differently" (p. 7).

Limitations

We are not able to claim, definitively, that teachers' knowledge about writing developed through becoming 'researchers' of their own practice. We acknowledge that teacher-espoused beliefs, and reports about their practice (Parr, Timperley, Reddish, Jesson, & Adams, 2006), are not necessarily a reliable indication of teacher beliefs and practices in action. Nonetheless, evidence from documentation and professional discussion suggest that the process of engaging deeply with their students' writing had an impact on teachers' practice. Teachers were able to articulate what they knew, and how they were using that knowledge to meet the specific learning needs of students and aspects of their own learning that needed to be addressed. Neither can we, with confidence, claim that the increased gains in student achievement were due solely to the inquiry process. Schools in this area were undertaking other professional development initiatives that may have had a generalized impact on teachers' practice.

CONCLUSION

In schools with historically low achievement in writing, teachers engaged in an inquiry model as practitioner researchers. They analyzed students' writing samples closely using achievement data as evidence of their teaching effectiveness, as well as students' learning and teaching needs. Through becoming researchers of their own practice, they gained deeper insights into the processes of teaching and learning of writing, which in turn had a positive impact on student achievement. The inquiry-based professional development in the project had, in Fleischer's (2004) words, "foster[ed] their ownership of their learning and encourage[d] collaboration with colleagues." (p. 26). These teachers were indeed "doing things differently."

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