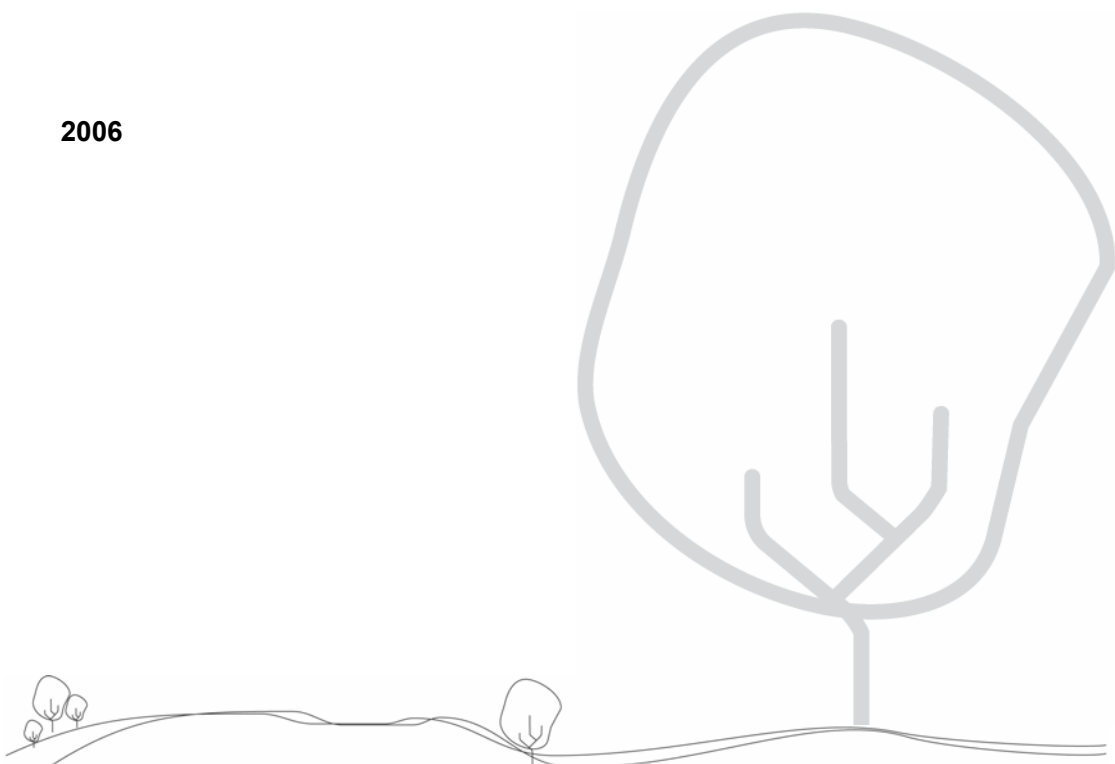# Making sense of learning at secondary school:

an exploration *by* teachers *with* students

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Acknowledgements

1. Introduction

Focus of the project

Within New Zealand in recent years there has been a growing sense of dissatisfaction with current secondary school structures and processes. While teachers, students, parents, and politicians seem variously (although, it must be said, quite differently) disenchanted with many current secondary school practices, most of what is reported in the media is built on idiosyncratic experience and anecdote, not on evidence-based research. Now, more than ever, there is a critical need for New Zealand-based evidence of how teachers' pedagogical practices are related to student engagement in learning and thus student achievement within New Zealand secondary schools.

There is a growing body of international research and literature that seeks to elucidate the forces that impact upon and shape student learning and achievement in schools (e.g., Department of Education, Training and Youth Affairs [DETYA], 2000; Fullan, 1993; Rudduck, 2001; Townsend, 1994). Major studies that focus particularly on understanding students' views on teaching and learning in the United Kingdom include the Economic and Social Research Council's (ESRC) Network Project, Consulting Pupils about Teaching and Learning, co-ordinated by Jean Rudduck ("Focus", 2001). While such international work can inform our understandings and provide a framework of contemporary literature within which to locate national studies, there is a need for research that is grounded within the context of Aotearoa New Zealand. Graham Nuthall (2002) suggested that to provide New Zealand teachers (and, we suggest, teacher educators) with an understanding of how their activities affect student learning, we need to know how student experience is shaped by teacher thinking and teacher activities, and how students construct meaning and learn from classroom experiences. To reveal this, we must get inside the students' heads—*we must ask the students*.

International and national research shows that the two most important factors in students' engagement and variance in achievement are the *students themselves* and the *teacher* (Hattie, 2002). Few studies, however, have sought to understand learning simultaneously from the perspectives of the two parties immediately engaged in the process—the teachers and the students (one American example is Bond, Smith, Baker, & Hattie, 2000). John Hattie, one of the researchers in the Bond et al. project, suggests we need to identify and examine those attributes that have a marked and meaningful effect on student learning to assist us in addressing the "longer tail" of low achievement identified within New Zealand (Hattie, 2002, p. 6). This directs us to make explicit and interrogate the ways in which teachers *and* students make sense of learning and to examine whether, how, and in what contexts they support or confound each other.

The pioneering work of New Zealand educational researchers Graham Nuthall and Adrienne Alton-Lee in investigating the nature of pupils' learning in primary schools is helpful in informing this project. Alton-Lee and Nuthall (1990) developed a model of how children learn in classrooms and suggested that teachers need to understand the ways their pedagogical practices are likely to affect the ways children learn. Subsequently, their extensive work in the Understanding Learning and Teaching Project (Alton-Lee & Nuthall, 1998) demonstrated that effective teaching needs to be coherent with the ways in which students learn. In her best evidence synthesis *Quality Teaching for Diverse Students in Schooling: Best Evidence Synthesis*, Alton-Lee argued that "quality teaching is optimised when teachers have a good understanding of, and are responsive to, the student learning processes involved" (2003, p. 45). The initial challenge in this our research project was t*o make student learning processes explicit through asking secondary students how they understand and make sense of learning at school.* This challenge, however, must be understood within the context of student and teacher interactions in the secondary classroom.

In his doctoral study on teachers' conceptions of assessment, Gavin Brown of the University of Auckland included a study that identified tensions in the ways in which secondary teachers and students understand learning (Brown, 2002a). Students conceived of learning as surface-level mastery of information and facts, while secondary teachers agreed more strongly with a deep view of learning (Brown, 2002b, p. 72). Brown (2002a, 2002b) argues that the students' views of learning actually reflect activities that teachers provide for them and the values teachers convey as being important, primarily in attaining good grades in final assessments. Thus, following Brown's assertions, students are construing learning in ways that they have been socialised to do, through their experiences of what is valued by teachers. This presents the second challenge of this project: *to support teacher researchers as they bring together the ways in which they and their students make sense of learning and examine ways in which they are coherent or otherwise.*

Alton-Lee and Nuthall (1990) and Purdie and Hattie (1999) argue that successful learning requires that students (and teachers) have a wide variety of learning processes that can be used flexibly, yet Brown (2002b, p. 72) demonstrates that teachers and students in secondary schools continue to "talk past each other in terms of their conceptions of learning". This project sought to build on the New Zealand work of Alton-lee and Nuthall, Hattie, Brown, and others to make explicit and analyse, through intensive study of groups of students and teachers across three Manawatu secondary schools, the ways in which students and teachers make sense of learning, and the forces that shape these understandings.

2. Research aims and objectives

> Somehow educators have forgotten the most important connection between teachers and students. We listen to outside experts to inform us, and, consequently overlook the treasure in our very own backyards: the students. (Soo Hoo, 1993, p. 389)

Until the last two decades the situated complexity of the ways in which students and teachers understand and make meaning out of learning has gone virtually unexplored. Further, the perspectives of students and teachers have been all but absent from educational research until recently. One research area that responds to calls for teachers to engage in the scrutiny of their own practice and its effects on student learning in an effort to advance their own (and our) knowledge about teaching and learning is *self study*. Self study of teaching practice has grown from the areas of reflective practice (e.g., Brookfield, 1995; Dewey, 1933; Schön, 1983, 1987) action research (e.g., Kemmis & McTaggart, 1988; Mills, 2002) and practitioner research (e.g., Cochran-Smith & Lytle, 1993; Day, Calderhead, & Denicolo, 1993). This project draws on self study as a means for teachers, across three schools and a range of subjects, to explore their own thinking and conceptions of student learning and to examine these in light of what *students say about negotiating learning within their classrooms.* As part of this collaborative project, we sought to broaden teachers' (and our) understandings of how seeking student perspectives can contribute to goals of enhancing pedagogical practice.

Fischler (1994) reports that teachers have relatively limited views on student learning processes and may not purposefully think about, articulate, or critically examine how students learn in classrooms. It is reasonable to assume that, unless provided with reason and opportunity, students also may not typically examine their own learning processes. In light of the aforementioned New Zealand research (e.g., Alton-Lee, Nuthall, Hattie, and Brown) it becomes clear that bringing together the ways in which both teachers and students understand and make sense of learning is critical, and well overdue.

This project enabled participating secondary teachers to engage in school-based research to enhance their own understandings of how students learn and how their own teaching practice affects that learning. In so doing data and collaborative support was provided for the teachers to engage in pedagogical reform. The participating teachers were themselves the key researchers within this project. With the assistance of the university-based researchers, teachers were introduced to ways in which they can make explicit and examine critically both what they intend to do in the classroom (espoused theories) and the reality of their classroom practice as it is experienced by students (theories in use). While the data collection was facilitated by the university researchers, the interpretation and analysis were undertaken collaboratively with the participating teachers as a means of mentoring teachers as researchers.

Drawing on the experiences of participatory research projects in schools in the United Kingdom (e.g., the Consulting Pupils Project) and work by Professor Russell Bishop with adolescent Māori students in New Zealand (Bishop, Berryman, Tiakiwai & Richardson, 2003), this project sought to move beyond using students as a data source for someone else's decision making to engaging students as active respondents and co-researchers. Through enabling students to reveal how they understand and make sense of learning, this study broadened the teachers', students', and our own understandings of student learning processes. In addition, it broadened our understandings of the ways in which consultation of students has the potential to contribute significantly to pedagogical and school reform.

Research questions

This study sought to shed light on how learning in secondary schools is understood and how meanings are constructed by those people directly involved—the students and the teachers. Using secondary classrooms as the authentic context, this study used the voices of students and teachers to specifically address the following questions:

- What do teachers understand about student learning?

- How do teachers seek to promote student learning in their classrooms?

- How do students understand their own learning processes?

- What do students identify as being critical to enlisting and sustaining their engagement?

- What do students identify as barriers to their engagement?

- What coherence is there between teachers' and students' conceptions of student learning?

- How can the reconstructed experiences of students' learning inform the ongoing development of teachers' pedagogical practices?

3.   Research design and methodologies

Adrienne Alton-Lee (2003) highlights multiple barriers to judging the quality of teaching through observation-based research. She asserts that since learning occurs within the students' minds it is essentially unobservable, and judgements on the quality of teaching and learning are necessarily based on inferences (2003, p. 8). This draws attention to the need for a research approach that would gain access to the ways in which the students understand learning, how they engage with classroom learning opportunities, and how they negotiate meaning through them. In addition, there was a need to access the typically tacit assumptions and intentions underlying the participating teachers' pedagogical practices which, according to Alton-Lee and Nuthall (1990, 1998) and Brown (2002a, 2002b), impact upon the ways students learn.

Participants

This project involved groups of teachers, school management and students from three secondary schools in regional New Zealand. Representatives from the three schools gained expressions of interest from teachers within their schools and collaborated with researchers at Massey University in the design of the project. While not representative of all of New Zealand schools, the three schools do reflect characteristics of a range of secondary schools within New Zealand. The field-based researcher (Nicola Maw) worked within each school for a school term alongside the individual teachers who volunteered to be involved in the study. Participating teachers were asked to nominate a class in which to focus the project and this class was visited each week by the field-based researcher. Students within each of the nominated classes were asked to provide a focus group of four students who they felt represented the range of students in their class in terms of gender, learning ability, and interest in subject. Students determined how the focus group was to be formed (typically through voting) and provided the researcher with the final names. In total, 18 teachers across the three schools participated, 328 students completed questionnaires, and a total of 61 students participated in weekly focus groups for the term during which the project was located in their school.

The research design aimed to capture what students and teachers think and say about student learning, to observe teaching practice directly (Kane, Sandretto, & Heath, 2004), and to reveal the thinking, beliefs, and conceptions that underpin teachers' practice. To do so we adopted a multimethod research design that allowed triangulation of data through multiple sources (students, teachers, and documentation), and multiple data collection protocols, including questionnaires, individual teacher and student focus-group interviews, stimulated recall interviews with teachers and students, and teacher and student learning journals. Each of the data collection methods is presented below with a brief explanation.

Data collection methodologies

Questionnaires focused on eliciting conceptions of learning and the contexts that support or stymie learning were completed by participating teachers and all consenting students within their nominated classes. These questionnaires enabled the research team to establish a baseline at the beginning of the project that provided a means of validation against previous research studies that utilised student questionnaires (such as Brown, 2002b) and current projects in United Kingdom (e.g., Consulting Pupils Project). Data from the questionnaires enabled researchers to refine questions for the subsequent interviews with participating teachers and the focus groups of students from each teacher's class. They provided an agenda for subsequent research team discussions, ensuring that student views were listened to and taken seriously.

Initial interviews with individual teachers and with elected focus groups of students from their classes provided both students and teachers with opportunities to talk about learning and to describe ways in which they understand and experienced learning (or how they perceived students to learn). Specific interview questions were refined through consideration of the data emerging from both teacher and student questionnaires. Students, for example, were asked to identify what learning means to them, how they know when they have learned, and ways in which teachers and peers support their learning. They identified those aspects of teacher–student interactions that they believe created opportunities or barriers to their learning. Thus, they served to elicit students' *espoused theories*—what they thought and said about what learning is and how it happens. Teachers were asked to reflect upon and talk about how they construe student learning and what steps they take to support student learning in their classes.

For the video-stimulated recall (SR) interviews, lessons by the teacher researcher were videotaped and the tapes were used as a stimulus in subsequent interviews with the individual teachers and, separately, with focus groups of students. These interviews were all conducted as soon as possible after each recorded lesson. To ensure that the teacher and students had the opportunity to fully reveal and explore their constructions of learning, videotaping and SR interviews took place over a series of lessons (typically, a lesson with the same class each week over 6–8 weeks). This allowed us to observe teaching practice at first hand, and give the participating teachers and students opportunities to articulate the typically tacit procedural knowledge that underpins decision making and interactions in classrooms. The SR interviews served as both a data collection device and a means for the teachers themselves to critically interrogate their own practice in a form of supported reflective inquiry as teacher researchers.

Through watching a videotape of lessons they had participated in, students were able to identify and articulate aspects of the teacher's practice and the classroom interactions that engaged their learning and, conversely, aspects that served as barriers to their learning. In this way, students themselves articulated and theorised how they learned and identified ways in which teachers' pedagogical practices supported (or otherwise) their learning. The researcher used probing questions (refined from the earlier questionnaires) during the SR interviews to assist students to reveal the effects on their learning, not merely on their activity.

With the support of the university researchers, participating teachers examined transcripts and excerpts of the students' SR interviews as a way of bringing together the understandings of both teachers and students of learning within each specific class context. This stage of the research process was critical to the teachers' self study and ensured that the students' perspectives were acknowledged and examined within the context of the intentions and goals of the teachers. It is through this examination that the teachers demonstrated their commitment to hearing the voices and perspectives of the students. They examined students' statements about learning and the things that impact on their learning, and how that could, in turn, influence teachers to engage in pedagogical reform of their own practices.

In the school-based research project, participating teachers and focus group students maintained *learning journals* through the course of the school term. The journals were introduced to provide an opportunity for the students to talk about *what* they are learning, *how* they are learning, and what they are learning *about their own learning processes*. The teachers' journals were intended to provide a space where teachers could chronicle and reflect \upon their own perspectives on student learning and, perhaps more importantly, record their responses to *what they are learning about learning* from the students. While in a number of schools participating in the UK Consulting Pupils Project (see, for example, Fielding, 2001; Macbeath, Myers, & Demetriou, 2001) learning journals have been demonstrated to be an effective means of ensuring that students' perspectives are listened to and heard by teachers, they were not so successful in this project (see Section 5: Limitations of the Project).

Strategies employed to develop effective relationships and partnerships

Partnership between university-based researchers and school-based participants relied predominantly on the presence of the field-based researcher (Nicola Maw), who worked alongside teachers within the schools. Relationships were established on a school-by-school basis rather than as originally planned—meetings between all research participants across the three schools. A meeting of the whole research team was planned early in the first year of the project. However, the floods in the Manawatu prevented this from taking place, although email contact was established. After a meeting with local principals, Ruth Kane met with the senior management liaison staff from School A, School B and School C. This meeting provided an opportunity to keep those schools not programmed for research until later that year or in the second year of research, in touch with current progress and with emerging developments in the research process.

Introducing the research projects to school staff took on a unique format in each of the three schools, in response to school contexts and scheduling challenges. At each school, Ruth Kane and Nicola Maw presented the goals of the project at a whole-school staff meeting in the term before the project was planned to start, to give staff an opportunity to consider the expectations of the project and to volunteer to participate. The invitation to become involved met with a range of responses. The initial reluctance resulted in three very different research experiences in each of the three schools and in some cases continued to affect the project's progress within the school. For this reason, specific aspects of the three research partnerships that evolved are presented below. Challenges in establishing and maintaining research partnerships are identified through reference to challenges encountered in this project.

Ensuring shared understanding of research: pre-research workshops

Workshops were held with the School A and C teacher researchers to introduce them to the methodological practices involved with this project and to begin to build the critical relationships required as research partners. The focus of the workshop included: teachers' conceptions of learning, teachers' commitment to seeking student input, recruitment of student participants and logistical preparation to ensure immediate commencement within the school at the beginning of the following term. At School C this workshop was also attended by an adjunct Māori researcher who was assisting with the project in the rūmaki class.

Joint ownership and shared understanding of the purposes and goals of the research project is essential to ensure sound effective research partnerships. While secondary schools and universities are busy and finding a common meeting time is challenging, the effectiveness of the research can be jeopardised through not attending to this essential preparatory phase.

Dedicated space for field-based researcher

This project required Nicola Maw to be situated within each school continually over a school term. At School A, Nicola was integrated as a member of the staff for the duration of the term of research activity that allowed for greater partnership and the building of foundations for establishing relationships between researchers, teachers and students in this phase of the research. A dedicated room was provided where Nicola could meet with teachers and students in private and store research equipment and files.

School-based research conducted in partnership with teachers ideally requires some dedicated space where participants can focus primarily on the research and not be distracted by other school responsibilities. A project such as this requires a private space to enable interviews and focus groups to be conducted without being overheard or distracted. Space is a limited commodity in secondary schools and the required dedicated space is difficult to secure without the full understanding and support of school management.

Keeping the communication alive: regular meetings

Regular meetings are essential to the research project to enable researchers to share ideas and experiences and to provide feedback to the research team leaders. A regular pattern of weekly meetings over morning tea was established at School A, ensuring that participating teachers and researchers shared understandings of the progress of the project.

Longer, working meetings in the fifth and sixth weeks of the project cycle enabled all team members to share their experiences and responses to the research, and talk about the methodologies used and discuss which were most useful to them in the exploration of learning in their secondary school. At these meetings the university researchers shared various quotes and findings from current and previous international research in similar areas. These meetings also allowed teachers to contribute to the research analysis as formats for analysis were discussed and agreed on.

Barriers encountered in building effective research partnerships

Recruitment

Responses from staff in the three participating secondary schools varied considerably; there were a number of reasons for this. In School A the researcher received an overwhelming response, causing us to return to the school in the second year to work with a further group of teachers. In School B and C the responses were more cautious and fewer staff felt able to set aside the time needed for the project.

The overwhelming interest from staff in School A can be explained by the leadership of the associate principal, who himself had introduced the project to the staff in both formal and informal forums over previous months. A number of the staff were completing higher degrees and revealed a strong interest in exploring their own teaching and the current research in this area. While there were many committed staff at Schools B and C, the teachers appeared to understand the project predominantly as an addition to their workload. There was some subsequent evidence that some staff who became involved in the project were "required" to participate rather than motivated by their own interest and commitment.

Researching one's own practice while teaching full time is an added demand on a secondary teacher's time and energy. In addition, this research project required that volunteer teachers open their pedagogy up for critical scrutiny by researchers, peers, and their students. Such openness cannot be expected until the teachers themselves have significant trust in the researchers, which takes a degree of time and dialogue to create. While such trust was already established in School A through meetings between the school leadership and the university researchers, in the other two schools, where there had been one meeting and email interaction, it was tentative at best. On reflection, the research leader Ruth Kane should have taken more time in building relationships with key liaison people in each school over an extended period before seeking teacher participation.

Lack of pre-research workshop

For School B we were unable to schedule a pre-research workshop with participating teachers. Although an initial research meeting was planned with the teacher researchers and university researchers, due to their tight schedules the teachers were unable to fit one in at the end of Term Two before we began the fieldwork in Term Three. This led to misunderstandings about what was expected of the teachers and in some cases the purpose of the research.

Lack of dedicated space for field-based researcher

Securing a space to work was a serious challenge in School B. This resulted in the research project being shuffled around the school to various temporary locations.

Lack of fieldwork time in school: interrupted school days

Secondary schools are notoriously busy places in which staff and students have multiple demands on their time and attention. Choosing the "right time" to locate a research project in a school is fraught with challenges. In the case of this research project, the third term of 2004 was a short term— a week and a half of exams at the end, with many organised school activities along the way—which meant that we were unable to have as many stimulated recall sessions as we would have liked. As a result, few of the research classes and focus groups in School B managed to complete the required number of stimulated recall research cycles. For example, one teacher and her class were unable to continue with the research past the first phase. Each of the days that had been scheduled for filming and stimulated recall interviews had other school activities allocated, which meant that we were unable to carry out the filming. Although the schedule was compiled in discussion with the participating teacher, subsequent planning failed to include the research project.

School-based research needs to understand and be responsive to the dynamics of a secondary school and the many interruptions common to any school day. This project found that school guests, student field trips, school sports days, student alternative classes, and extra-curricular activities all mitigated against the smooth conduct of the research project and also affected the research partnerships we were able to establish. Understandably, teachers and students sometimes viewed the research project as a low priority in their busy lives and as a result meetings were missed, rescheduled, or cancelled. In School B, students did not appear to be as committed to participating in the student focus groups as in Schools A and C. Their attendance was variable compared to the consistent participation of the other two schools'.

Teacher release time

Although the teachers were made aware of the teacher release time available to them and were encouraged to take it in order to have adequate time to reflect during the research, school systems did not always enable teachers to take advantage of this time. As a result, not only did teachers lack enough time to consider the research data and reflect on its implications for their teaching practice, but in some cases they were unable to stay for the scheduled interview times. At times this was because the school did not ensure that there was a system for teacher release. However, some teachers of senior classes also felt it was inappropriate for them to plan a lesson for a reliever when they were in fact on the school grounds. They found it difficult to justify not teaching their own senior classes.

Challenges

Responding to specific school needs

Two of the schools that we worked with decided to conduct research in classroom contexts that involved redesigning the research methodology in their cases.

English for academic purposes (EAP) class
One teacher conducted research with her EAP class. The cultural makeup of this class made it immediately apparent that we would need to rethink the methodology that we had planned to use. After the initial presentation to the class when we gauged their response to the research we met with the university researchers and the class teacher to generate alternative methods. The students were uncomfortable with the videoing aspect of the research and with the outside researcher. It was decided to remove altogether the video-stimulated recall aspect of the methodology and to collect feedback through redesigned and more substantial fast feedback forms.

Instead of the researcher conducting initial interviews with the students, the teacher conducted them herself. Although she used the same interview schedule that was used with other classes, she was encouraged to veer from it whenever issues came up that the student or she herself would like to explore further.

Rūmaki class

One school that we worked with has a strong commitment to te reo Maori, and it was decided that a rūmaki class would take part in the research. This necessitated contracting a research partner fluent in te reo who could work alongside Nicola Maw and able to work with the teacher and students involved.

Mr Sonny Mikaere, a highly regarded Māori educator, agreed to assist us in our work with the rūmaki class and was contracted for this purpose. Questionnaires, fast feedback forms, and other resources were translated into Māori in order to be used with this class. Weekly interviews with the teacher and students slipped comfortably between te reo Māori and English, depending on how best the participants felt they could express themselves.

Ethical issues

Ethical considerations provided a strong basis to our overall research design, not only in the general issues that are apparent in any research project (for example, informed consent, confidentiality, and cultural considerations) but also because of what the research was planned to be—a collaborative undertaking, building capability and capacity, enabling student voice, and creating and/or sustaining co-constructed and democratic classrooms.

The courage and commitment of those teachers who volunteered to take part in this research must be acknowledged and commended. They had to lay themselves open to the critique of their students and facilitate a change in the balance of power in their classrooms. They did this willingly, albeit with a little trepidation, and this openness was crucial to the success of the project and its positive outcomes in their classrooms.

Teachers and students were given both formal and informal support to assist them through the shifting balance of power brought about by the research process. Formal support came through workshops and meetings in which scenarios from previous student voice research were discussed. Important quotes and pieces of advice were also included in teachers' and students' learning journals. Informal support was through day-to-day interactions and conversations, aided by the researchers' presence in the school and availability to teachers and students[1].

One ethical dilemma faced by the researchers within this project resulted from the fact that the project was originally designed to include four schools. Early in the first year it became apparent that moving in and out of schools too quickly would mitigate the influence of the project, as the research design required the field-based researcher to establish trusting relationships with students and teachers and work closely with them over a school term. At the end of the term there were questions from students in particular, challenging the researchers regarding their ethical responsibility to offer ongoing support for the school as it negotiated ways to extend the research to other staff members and students and adopt student voice and teacher researcher practices that were developed as part of the project. This challenge by the students resulted in the research design being limited to three participating schools and the project returning to the original school in the second year.

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[1] For a more comprehensive discussion on the principles, values, and conditions for student voice research, see Kane, R., & Maw, N. (2005). Making sense of learning at secondary school: involving students to improve teaching practice, *Cambridge Journal of Education, 35*(3), 311–322.

4. Findings

The findings are summarised below according to the main research questions, which were:

- What do teachers understand about student learning?
- How do teachers seek to promote student learning in their classrooms?
- How do students understand their own learning processes?
- What do students identify as critical to enlisting and sustaining their engagement?
- What do students identify as barriers to their engagement?
- What coherence is there between teachers' and students' conceptions of student learning?
- How can the reconstructed experiences of students' learning inform the ongoing development of teachers' pedagogical practices?

Teacher understanding of students' learning

Data analysis revealed that teachers held conceptions of student learning that could be located in the first three cognitive categories of Bloom's (1956) taxonomy of educational objectives. The majority of the teachers from all three schools perceived students' learning predominantly as acquiring information and building up knowledge routinely (acquisition). A few saw it as making sense of ideas and forms of knowledge (comprehension) and applying these to new situations (application). Only one teacher provided evidence of conceptions of teaching that reached beyond these levels, such as reference to analysis and synthesis of knowledge.

Learning as acquiring new knowledge

Teachers in the first group perceived student learning as, for example: "adding to your own knowledge of what is going on in the world"; "acquiring new knowledge"; "adding to previous knowledge"; "being able to retain information"; and "taking on board things". The responses in this group focused on the information transmission orientation of learning (instruction), with teachers as subject experts and students as passive learners. Learning in this sense is teacher centred and content oriented, involving telling and taking, with students adopting only a surface approach to learning. Student engagement is largely in rote learning and reproduction of information. One teacher perceived learning as being in a causal relationship with and a result of teaching. She commented:

> To me, learning does not take place unless teaching takes place. I think learning and teaching go hand in hand and, like I said, it is a partnership. You know there is no going out of that cycle, it's two things in one … To me, it is the same thing; learning doesn't take place unless teaching takes place. And when teaching takes place, then learning will take place.

This cause-and-effect view, however, has its shortcomings in that it positions students as incapable of learning on their own without the teacher's help. Two teachers perceived students' learning as "adding to their knowledge so they can pass at the end of the year", "knowing the answers for the external exams", and "what it is they need to know in order to pass a particular criterion". This results-oriented focus may miss learning as building a wholesome and adaptive person.

Learning as comprehension

The second group of teachers perceived students as active participants in the learning process, and learning to be the comprehension of tasks to achieve task competence. Teachers described learning as "an ability to understand", "gathering information, processing and retelling it", "remembering and doing stuff", "gaining insight", "finding a way of doing things", "exploring new ideas", "more

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discovery than committing to memory", and "self-discovery of things". Responses point to teachers acting as facilitators of learning and allowing a measure of student freedom to explore, discover, and understand through interaction with the teacher, the environment, and the subject matter. Student learning is thus more active and incorporates both knowledge discovery and a construction approach, with the student taking more responsibility for his/her learning.

Learning as comprehension and application

For some teachers, conceptions of learning changed as the study progressed, from mere acquisition of information and understanding something in the initial interviews to understanding something and being able to apply it to new situations demanding that knowledge or skill. These teachers formed the third group, whose responses had transformative and application purposes. The teachers perceived student learning as:

> Taking on relevant data and processing it in a way that they can apply it in their lives, learn some skills, learn about learning and how to use information to make good decisions.

> I think there are three levels of learning. If you can do a task, you've learnt how to do the task. If there's an understanding, you can do the task and you understand why doing the task works, you've learnt [at] a more conceptual level. If you can then take it and apply it to an unfamiliar but similar task, you've learnt to an even deeper level … If you've done rote learning, I think that is the lowest level of learning, like you've done the least learning, you've just memorised it and you can play it back.

These teachers typically described learning as a process of "input and then application" and "when you own something and you're able to apply it".

Learning as synthesis

From a total of 18 teachers interviewed, only one teacher provided evidence of holding a conception of learning that went beyond the first three levels of Bloom's (1956) taxonomy of educational objectives to include analysis and synthesis of the new information:

> [I] like to have people more in control of the tools of learning, so that they can actually take on relevant data and process it in a way that they can then apply in their lives in a way that makes sense. I'd rather [have] them actually learn some skills about how to learn and to use information to make good decisions.

Promoting student learning in the classroom

It has been argued that the way teachers conceptualise learning may affect the way they engage their students in meaning making in the teaching-learning process (e.g., Brown, 2002a, 2002b; Feiman-Nemser, 2001). The Making Sense of Learning at Secondary School project probed how teachers in the three schools sought to promote student learning in their classrooms. Data from initial interviews, stimulated recall interviews, and the exit interviews were analysed to identify how teachers seek to support and promote student learning. The themes that emerged are given below, organised into those that reveal how teachers conceptualise the learning and teaching relationship, and followed by the pedagogical approaches and strategies teachers employ to promote learning in the classroom.

Knowing students and their needs

The first theme, and one that most teachers articulated as fundamental to promoting student learning, was the need to know students and their needs before teaching can respond to these needs. Teachers perceived that, for learning to take place, they had to take an interest, not only in the young person who was their student, but also the student's wider school, home, and life experiences.

> To me, I think, the most significant thing is to take an interest in their lives and see them as a total person. Many of them come from homes which are good, but many of them come from homes which are diabolical. And some days, yeah, I will tell them just to put their heads down and not do anything in class. And I'm not going to get paranoid or feel it's a reflection on me, because sometimes there are genuine factors that are bigger than a [subject] class.

It was acknowledged that becoming familiar with all facets of the student's life (and, conversely, for students to know the teacher) takes time—which highlights the importance of retaining teachers in schools so that both teachers and students are able to adequately know each other and each other's preferences for teaching and learning.

A teacher who had spent a lot of time studying his students summed up how he perceived the class. He pointed out that by knowing each of them he was able to respond to them as individuals with unique personalities, motivations, and needs. As he put it:

> Knowing my kids is a challenge. They've got a lot of strong personalities in there and they're all individuals. They're harder to teach, they're not dumb, they're actually pretty onto it, but they take longer to motivate. Yeah, they're somewhat quiet as well and they think they know it all. When they're too quiet, then I know that they haven't actually understood anything I've said and so to reassure them I've got to explain it again.

Teachers perceived that to know the students meant understanding their unique personalities, their strengths, and their problems, including health and emotional issues. The general wellbeing of the student was seen as crucial for learning to take place. As one teacher pointed out:

> I think that the emotional state of the student is important and the things that are happening in their heads, you know, if they are at peace with themselves, relaxed and comfortable, learning happens.

Taking an interest in students meant taking the time to understand their affairs by, for example, giving each student personal, undivided attention:

> I try to address each student to make personal contact with him/her. I also try to give them very clear feedback on their work, and when I'm marking their work I devote 100% to that piece of work and that kid. And I like them to think and recognise that I do that, I like them to think that they're getting my attention. I would like to be able to have a one-on-one interview with all my students.

Establishing respectful, trusting relationships

In seeking to know their students well, teachers acknowledged that teachers must cultivate and establish appropriate relationships with their students as they are both part of a teaching and learning partnership. Many teachers proposed that the relationships between the teacher and students were fundamental to successful teaching and learning in the classroom.

> I think teaching and learning is a partnership. I think it's a partnership between two people and that is the teacher and the student, and it goes both ways. There has to be a relationship formed, there's [got] to be respect there, there has to be understanding, there has to be that security, safe thing going on in the classroom. That is all going to help the student's learning.

Teachers talked about relationships that required the teacher to be close to the students without losing their professionalism. One way of achieving this was for teachers to make sure that they cultivated trust between themselves and their students. Students had to feel safe and unthreatened in the environment provided by the teacher for learning. As one teacher put it:

> I also think that the environment they're in, especially for these kids, if they're in a safe environment where they trust their teacher, they trust one another, then learning, they're more able to learn, it occurs better.

Teachers reported that relationships depended on teachers sometimes interacting with students on a less formal level, having fun in learning with them, and having students feel that the teacher was available to them whenever need arose. As one teacher put it, "I think the most important element in class is, the closer you get to the person, the higher attention they will learn and give. And that's the reason I walk around the room quite a fair bit".

A small number of teachers perceived that successful teacher and student relationships depended on good behaviour from students. Appropriate student behaviour was a prerequisite for classroom learning to be both positive and pleasurable. As one teacher put it:

> I think learning and behaviour are things that go hand in hand. If the behaviour is a positive behaviour, then learning, I think, will be more of a positive thing. Otherwise, if it's more negative, then yeah, the teacher will have a hard task ahead to get the learning process to happen with students who have behavioural problems.

Taking account of prior knowledge and lived experiences

Some teachers perceived that, in order to promote student learning, tasks given to students had to be grounded in the reality of student experiences—either in terms of prior knowledge or in terms of actual lived experiences. This view of learning involved making connections to the students' experiences and moving from the known to the unknown. As one teacher put it:

> Some of them need repetition, and some of them need that we relate back to the real world or to their own personal experiences. I think it has to be linked back to the old information, which is why I am always stressing back on to those bits that we've had before. I think it's very difficult to learn something that is completely new, that you have got no links to.

Grounding learning in the real world of learners also meant that what students learnt had to be relevant to what they perceived as important to them, now and in the long term. In the short term, students had to perceive the task as directly affecting the self and yielding personal benefits to them. For example:

> For them to learn something, they need to see the relevance of it. That is what I think. It needs to be relevant to them and if there is no direct relevance, it need to be tied onto something that makes sense to them, so it's not just doing, it's not just a one-off thing, but something that fits into the bigger picture.

Classroom atmosphere and conditions

All the participating teachers from the three schools agreed that a safe environment was important to students' sense of security. Teachers also spoke of the need to cultivate an atmosphere that was relaxed and free of tension and in which every student felt happy, valued, and accommodated. One suggested way of building a safe and happy environment was to encourage students to share their concerns about the kind of environment that was conducive for their engagement. One teacher pointed out:

> I like to think that I encourage students too say what they feel. And that is okay. Yes, I try and sort of build a safe and pretty happy learning environment. A good, good atmosphere in the classroom, I think, you know, they need to be happy to be there, relaxed, and they need to know exactly … what we're going to cover.

A stimulating classroom environment was suggested as motivating students to engage and achieve in learning. Teachers talked not only about covering the course material but also about "delivering that in an interesting way. I want these kids to like what we're doing, to find it fascinating". One teacher considered that humour was a useful way to engage students and keep them interested in the learning process:

I do it just to break the monotony of the lesson, introduce some fun, not games—learning, you know what I mean. And to get them used to, and hopefully to stimulate them. Sometimes I do it at the beginning of the lesson rather than at the end.

Another teacher proposed using some brain teasers to help students settle down and focus on the present day's work: "For instance, the other day when I had them, we did a brain teaser at the beginning of the lesson, I was just trying to stimulate them and then settle them into their job". One teacher pointed out that visual aids on walls were stimulating classroom features that aided learning: "I'd say for the environment perhaps, a stimulating environment, you know, depending on what is on the wall and things. Maybe create an environment that shows that learning is taking place".

Teacher preparation

From the initial through to the exit interviews teachers generally agreed that, for effective teaching and learning to take place, the teacher had to be organised. Organisation meant preparation for the lesson in terms of goal setting, lesson plans, appropriate language level, sequencing and pacing of lessons, and use of teaching aids and examples as well as the availability of learning resources. One teacher said, "I give myself time to think even before I go into the lesson [about] the language I'm going to use … I actually need to think of those words that go into learning outcomes". Another teacher commented:

I think the actual teaching is a lot more in the preparation … How you deliver it has definitely got, is part of it … what you're going to teach, and all the examples you give them, and all that kind of stuff, you do the preparation before they come into class and I think it's a bigger portion of the actual teaching. Like breaking it down into steps so that they really understand it … I think that is the biggest part, rather than just your delivery from the front of the room.

It was also apparent from some teachers' comments that some of the more experienced teachers had abandoned explicit lesson preparation and were relying on their many years' experience to guide them. As one teacher put it, "I don't always think as much about how I am going to teach something as the content of what I'm teaching and I want to go back to being better at doing that". For this teacher, the students' feedback through the course of this study caused her to re-think her "default" approach to teaching.

Clarity of instructions

The importance clear and explicit instructions during class became all too clear as this research project progressed. Through the stimulated recall interviews teachers repeatedly self-identified as not giving clear instructions and, consequently, having to spend too much time trying to explain things afterwards. One teacher conceded that "I do not give clear instructions and I spent a lot of time today explaining the idea behind the concept". Other teachers perceived that to teach is to be able to find ways of getting the information across to students so that they are able to comprehend and act on it. One teacher said:

To teach a student is being able to explain things properly. If the teacher is specific in what she wants and then able to give out instructions clearly, then I think it is easier for the student to learn.

Throughout the stimulated recall interviews teachers consistently said they wanted to repeat things in class because they saw that their students did not understand the first time. For example, one teacher said, "For them to retain that information and the learning of that concept, I don't think one lesson will do it. They will need to have a bit more practice. A few more examples for it to sink in … They love repetition and it seems that the more repetition they're getting, the more they're learning, so I'm trying to put in a bit of that". These comments signal that teachers are often "talking past" their students so that their messages become lost through too little information, ambiguous statements, or too much repetition. Teachers often seemed unclear how to recognise when students had in fact

understood, and so often suggested that slowing down the lesson or repetition were good strategies to support student learning. As one teacher pointed out:

> We need to go slower or can we do this again … repeat certain things, and it is when repeating that, when you have to do exactly the same skill, you can't use the same information and you try to find other ways of introducing the same skill using a different format.

In these cases it became evident that students and teachers were talking past each other, with teachers assuming that repetition was needed for learning to occur.

Adequate positive feedback

Teachers perceived that feedback to students had to be encouraging and meaningful to keep them interested in the learning process. One teacher pointed out that in order to go forward students had to know how they performed in the last exercise—comments on performance were the barometers for future improvement. She commented that "feedback to the students, definitely giving students feedback is important, because if they don't know how they're going, you know they can't probably do better". There was also agreement that simply giving a student a mark for work done was rather inadequate, as many students wanted to know what the teacher thought about the work. Growing awareness of what constituted meaningful feedback in the course of this project had many teachers change from giving just marks, as they did in the initial stages of the project, to providing more detailed comments by the end. During an exit interview one teacher commented: "When I have just marked their essays and given them a mark at the end, they want to know what happened here. Are there any mistakes? They rely on the personal comments." Another teacher pointed out:

> I make sure that the comment is of some value and it actually gives them something. In my marking I have changed so that in my feedback I think I give them more direct feedback, which I didn't do before, it wasn't that detailed, it wasn't that focused.

The precarious balance of power and control

Teachers generally agreed that they did not want to lose control of the students by allowing them too much freedom. Many of these teachers perceived that students could be disruptive in class if allowed too much freedom. As one teacher's initial interview reveals:

> I feel I have got to control them to get them working because we're so short of time and so I tend to be more abrupt, I think, and a lot less friendly. But I try to push on and I'm not terribly open to discussion.

There were, however, other teachers who allowed students to debate issues and to hold and defend different views. As one teacher put it, "I always say that to the kids, that, you know, you don't have to agree with me, I welcome anyone to challenge me, just make sure that you've got something to support what you say and they do". Other teachers perceived that generating more classroom talk was healthy for learning: "silence is nice sometimes, but I think a bit of noise, a bit of talk, a bit of laughter is a good sign in a class". The teachers revealed different levels of comfort with allowing students control (and power) in their classroom, and varied in how much they permitted. For many, this position changed over the course of the research project. This change is discussed in a later section that focuses on the growing acceptance of student feedback and student voice.

Adopting a diversity of teaching approaches

Giving students varied activities to allow them to explore, discover, and experiment with things that they are learning was perceived as of great value in engaging students in the teaching and learning process. Some teachers were aware of their shortcomings—for example, one said, "I could develop a bit more diversity in my approach". Other teachers engaged students in a variety of ways: for example, "I've tried to put a little bit more variety"; and "they have to be given activities that are

varied that would allow them to explore the things that they're learning. You know, different types of activities for the different types of learning".

Some teachers advocated for discovery methods in teaching and learning, arguing that students had to have "opportunities to explore in terms of ideas … and have some reasons why a particular idea will work". This entailed allowing students to explore issues themselves, without teachers quickly coming to their rescue—for example, "making them have a go instead of just automatically coming to their aide as soon as it gets slightly too hard. So making them think about things first before help is available".

During stimulated recall interviews other teachers pointed to the need to concentrate on the process of learning rather than the final solution. As one teacher put it:

> I always say to them, it is not so much the answer that is most important, it's how you got the answer that is really important. It's the method you use, that's what has got to be correct. And you score more points in an examination by doing the method right, even if you come up with the wrong answer.

This view calls for discovering and understanding processes that lead to solutions. Approaches entailing simplification, explanation, description, and understanding were perceived as important, as pointed out by one teacher: "I've just got to make sure that they know how to simplify it, how to break it down, how to work it out, the strategies of solving it. It's teaching them the strategy to solving a problem".

A few teachers perceived that increased emphasis on students' hands-on practical activities enhanced the learning process:

> I'm focusing on making it more practical. I'm trying to put [in] lots more practical experiments, so they can see what we are learning about and also I've been looking into using games to teach concepts and things like that, 'cause it's less boring and I do think it does reinforce their learning.

Another teacher perceived Māori students as being "hands-on" and more oriented to practical work, and saw a need to include more practical work in classroom situations:

> I think one of the things that accelerates learning for Māori is the hands-on things, the practical things, the involvement in where they can use their hands to do things, because a lot of them are natural artists, a lot of them like to build and create with their hands and have creative minds.

Some teachers also expressed the need for teachers to include a lot of verbal and written examples in their lesson delivery, as these were thought to appeal to a wider section of students: "What I find here is the kids will learn an idea better not from a concept, but if you can actually practically give an example. I am probably not doing it as well as I could". Another way of engaging students in learning was to task students to research information by using the library and the Internet: "We do a lot of research, they use the library, computers, we're on the Internet, they learn how to use the Internet and research information".

Four teachers suggested at the initial interview stage that teachers should allow students to discover and experiment through trial and error as a way of building up knowledge. In this process, teachers were urged to be tolerant of ambiguity and learners' mistakes. As one teacher suggested:

> I think they have to be willing to give things a go and know that maybe they'll [the students] get things wrong. But that's okay, that is part of the learning process, just to get out and try things.

Teachers were urged to act as guides in the learning process to keep the students on track and focused in case they ventured too far. As one teacher said:

I think it's important to allow them that freedom, you know. I mean, if they go off track too much I pull them back. I certainly don't let them get out of hand or anything, but I pull them back and they are still learning. When they stray off and when they come back they are ready to come back and they are ready to focus again.

In the process of guiding, teachers needed to watch the way they responded to students. When dealing with mistakes, a more positive approach than ridiculing the student was suggested in order to build self-esteem. As one teacher said, "kids need to be safe. They have to feel like they're in an environment where they can make mistakes and not be ridiculed for it".

Peer collaboration

A popular approach used by many teachers in this study to promote student learning was peer collaboration. During the initial and stimulated recall interviews teachers reported that students learnt best through peer consultative processes, either in pairs or in groups:

I actually really like to put them in small groups or pairs, I think I do that quite a lot as I do like them to discover stuff for themselves. They engage more when they are in pairs or groups and they get so excited, not only about their own stuff but about somebody else's point of view and ideas.

The stimulated recall interviews enabled teachers to become more aware of what may better support student learning. As one teacher reported, "I'm aware of the need to be more interactive with them rather than the teacher doing most of the talking, this is probably the biggest thing I seem to have gotten out of it". Some teachers actually perceived students as learning more from their peers than from the teacher. One teacher commented that "I believe that they learnt from interacting with each other. I reckon they learn far more than [though] me talking to them". Discussions were considered an important feature of the interactive teacher–student and student–student collaborative process:

About up to two thirds of the students in any of my classes eventually learn to participate in discussions because I like teaching that way, I like firing ideas out there and getting responses, drawing everybody's ideas together and then getting them on to the board so that we're writing from notes, not just my ideas, but including theirs as well, teaching through discussion and drawing ideas out of their heads.

There was general agreement among teachers during stimulated recall and exit interviews that they tended to talk past their students and students had to seek clarification from friends through a process of peer mentoring. Some teachers perceived that sometimes swapping their teaching roles with students yielded better learning results, as students learnt more from each other than from the teacher teaching all the time:

I think it's quite important that they get to become the teacher. I guess sometimes it's not so much about what the class is listening to, it's about the person delivering it. They get to do the things that I would do … it's more about the person delivering, having the opportunity to be something other than the student. I always think it's important for the kids to get up the front and be able to have that sense of power. I've really encouraged them to help each other and some of them recognise that they can explain better than me to some of their colleagues.

One of the perceived benefits in teachers swapping roles with students was that students took ownership of the learning process through seeing themselves in the power position of teacher. Many teachers also perceived that swapping roles with students gave them the opportunity to be learners and to enhance their own practice through observing how students wanted learning material to be delivered. As one teacher pointed out, "as much as they think I am teaching them, they are teaching me as well".

Facilitator or teacher?

As part of the exit interviews, teachers were asked how they perceived their role as teachers in relation to student learning. Nine responses stated that the teacher's role in the New Zealand curriculum framework was to create favourable conditions for student learning to take place. Teachers had to be facilitators of student learning:

> We are supposed to facilitate learning, that's the whole language of the curriculum framework. So really, the teacher should be the role of the coach helping kids come to grips with the learning task and, give them the tools to help them learn. It made me really think again about what I could do to facilitate learning, rather than what I can do to be a teacher, traditional teacher.

For one teacher, this role of facilitator was "a combination of inspiring and motivating" students to take more responsibility for their learning rather than relying too much on the teacher. As the teacher put it:

> I like students who take responsibility for their own learning and don't expect me somehow to plant it in their brain. I think the biggest kick I get of teaching is when you get a kid to take control of their own learning and it's, I don't know, it's a combination of inspiring and motivating. It's putting ownership back to the kids and they're learning the skill, how to get the knowledge and how to learn.

Teachers talked also about trying to make students "do and think for themselves, instead of spoon-feeding" them, and to be "the ones encouraging each other to listen, they're the ones encouraging each other on task". One teacher perceived that when students took their own notes rather than copied the teacher's notes from the board, they tended to understand the lesson more as they wrote them in the language and manner they understood the lesson. He commented that students "would do better if they made up their own notes in terms of their own understanding".

Students' understanding of their own learning

Learning as acquiring knowledge

Similarly to the teachers, the majority of student respondents perceived learning to be acquiring information and building up knowledge routinely. Knowledge in this case was seen as external, and individually and deliberately acquired by one's self through personal experience or through being taught by someone. Comments such as "gathering new information and facts", "absorbing new knowledge", "copying the artist" (in art), "getting more knowledge about things", "extending what you already know", "getting new information", and "getting knowledge into your head" were common. On the other hand, knowledge was also perceived as "what teachers tell you and you like remember it" and "getting like taught something and understanding it", where someone or something is credited with bringing the awareness. This assimilation model of learning has been found to be dominant in most classrooms throughout the world and sees learning as mere instruction and the teacher as the knowledge reservoir (Carnell, 2005). One student perceived learning as process oriented and incremental. She said that learning is:

> Finding out or having to know on your own what you know and find out step by step what you are trying to learn … and put it together and, you know, I've learnt. You learn bits bit by bit, and like you form a picture in your head. Just like [at the] start little things, and then you get a lot of things and you just want to learn more and more so you get a big picture.

When this process is followed, as one student commented, you end up "having greater knowledge than you had before".

Learning as comprehension

The second category of students could be located in the comprehension category of Bloom's (1956) taxonomy of educational objectives—they perceived learning as understanding or knowing how something functioned. This is revealed in such comments as "taking in something new and understanding it", "when you have a good understanding of what you are learning", "understanding something you didn't know before", "understanding something you have never understood before", "understanding and grasping something that you never understood before", "when you can understand and comprehend it", and "learning is knowing things and knowing how to do things and being able to understand how something works without having to ask, you know, without having to be confused".

Some understandings of learning, such as "discovering things and new experiences", "learning from your mistakes", "figuring out how to do something", and "what you interpret things to be", had dimensions of metacognition. Some students, however, saw learning as going beyond the mere understanding and recall of knowledge. As one student pointed out:

> If you understood it and then forget it, that's not learning, that's getting it. Understanding is when you get the answer right, learning is when you always get the answer right and use it again later.

Learning as the application of understanding

The third category of students perceived their learning as acquiring knowledge and applying it to new situations:

> Building on what you already know but more in-depth things, and stuff like that. I think learning should be something you can apply to your life rather than just something you're able to forget on paper.

> Just building on information that you've known before but then able to understand it and then apply it to what you are actually doing.

This understanding of learning as the way ion which the individual tries to make sense of the situation at hand sits in the construction model of learning. One student perceived learning as transferring skills from one's firm understanding of a task to new situations demanding application, saying: "if you learn something, it does not always mean that you can understand it, but understanding it would mean that you know how, how you can apply it to something and use it". Another student perceived learning as a form of empowerment for viewing the world differently and for independent decision making: "learning is power. It gives you power to make your own decisions, have opinions, you know, see things in a different way". On the other hand, two students perceived learning as retention of information in order to influence one's future. They commented that "you need to remember it in the future, not just know it at the time" and "a lot of things that will shape you and your future".

What students perceive as supporting or hindering their learning

Conditions that support or hinder students' learning were found to be bound in the physical and emotional environment of the learner. In most cases, students referred to the elements they identified as supporting learning negatively, as potentially restricting learning. Thus they are reported together in this section. As in the teacher data, students commented on aspects of relationships, motivation, physical environment, and teacher strategies.

Relationships: support and encouragement of significant others

Relational aspects were perceived by students to be of paramount importance to their engagement and success in learning. These relational aspects were articulated as the support and encouragement

students received (or did not receive) from teachers, parents, and close relatives. Teachers in particular were perceived by students as having a huge effect on their learning, especially when relationships were positive. Students preferred a teacher who took a personal interest in them and paid attention to their individual welfare. Speaking of a particular teacher, one student said:

> He connects with the students. He comes up to you individually and he actually comes over and looks at your work … looks like he's really interested … and actually points out the good things and then says 'You can work on this, but it's actually good'. He doesn't like, yeah, [just say] 'That's all right, just keep going', he actually just stops and looks at it.

Conversely, a student who did not connect well with the teacher said:

> Teachers can have such a big effect. Like our [subject] teacher, he hates me. He picks on X and like it's really rude and X doesn't want to learn [subject] any more because the teacher sort of just puts him off it.

At times students' expectations were not met because help was not available from the teacher when they really needed it:

> I didn't always have the teacher's assistance when I needed it, so things took a lot more time. Like, I spent half the class time just sitting and waiting for the teacher because I can't nag other students saying how do you do this, blah, blah, blah.

One student commented that "I find teachers are lazy. They just make us write it down, they don't really care". Because some teachers were not easily accessible and sometimes were unwilling to assist, some students suffered internal conflicts in deciding whom to consult. Many students ended up asking their peers. As one girl pointed out, "If you don't understand something, then you can talk to your friend about it and it's not as scary as asking a teacher". Another student pointed that "Whenever we are stuck, I can always ask Mr. X, 'Oh Mr. X, I do not understand' and he's always willing to help. But with other teachers, it's hard to approach them for help". Students who perceived their teachers as accommodating, considerate, and respectful of them as learners were more positive about their chances of success in the subject.

The student–teacher relationship sought by students was not friendship but one that involved mutual respect and being able to relate to each other.

> If they respected us as much as we're supposed to respect them, I think we'd get along fine. Teachers need to try and bond with students. I like X's personality, it's really cool, real fun because you can just connect with him, which is good and then you get more interested in the subject.

> Yeah, it's cool, he's got personality, it makes him more fun and … that makes you want to pass. He respects you and it's fun and like when he says stuff it's always like, 'Yeah, that looks good but maybe if you did this', he doesn't really say 'Well, that's crap'.

Students perceived it as helpful when parents were well informed about what their children did at school and could also offer help with homework where possible. Students pointed that they struggled and were frustrated alone at home with homework when their parents knew nothing of what they were doing. One student revealed the tensions she experienced:

> It does make it easier when you have your parents, something that they are interested in too so they find they can help you more. Like my work, my mum is like 'I have absolutely no clue what you're doing so I can't help you' and then I get really angry because my mum can't help me and I'm like 'Stuff doing this homework, I won't do it'. But like when it's art, mum's like 'Try this, it might look really good' and we do the homework and hey, it looks really cool.

Four students felt an obligation to reciprocate their parents' hard work in sending them to school by working hard at school. This was seen as complementing efforts within the family and meeting

parental expectation that their children achieve at school: "My parents. They've worked so hard to get me into school and stuff and it would be a waste of their money". Another student said:

> Because my mum sent me here to get educated so I want to get educated. My parents sort of expect stuff, expect me to do stuff … encourage me because they have to pay lots for me to come here, because otherwise I wouldn't be here.

Classroom atmosphere and conditions

The students generally agreed that their classrooms were rather uncomfortable for effective learning to take place. Some classrooms were found to be too small for the class size, the colour scheme of walls was found to detract some students from working effectively, the rooms were too hot or too cold, and the furniture was not the most comfortable. They generally agreed that a comfortable and relaxed classroom environment promoted learning. In this respect, students implored teachers to create warm and relaxed classroom climates in which every student was free to participate.

> Mr. X creates an atmosphere which, you know, has this sort of relaxed umm feeling that makes, it makes you relaxed and receptive to information, you're not all tense and you are happy to co-operate with him.

Students also saw a comfortable classroom environment, as opposed to an environment where teachers were too strict and harsh, as one where teachers were friendly to students, used humour to ease the flow of the lesson, but maintained their professional authority. As one student put it:

> Like, people can be misbehaving and he'll tell them to shut up or whatever, he doesn't do it in an angry manner or anything, it's usually light-hearted, yeah, like in a joking way. So people are still willing to comply with him because he's friendly but authoritative at the same time.

The issue of resources was mentioned by many students as seriously affecting learning. In most cases students said resources were either inadequate or outdated:

> One thing is, there is not enough equipment for the class. That gets you really angry as well, like you go to get tools and there's nothing left and you are finding it's the same people who always get stuff and some people always miss out.

Communication: teachers need to listen to students

The need for effective communication between teachers and students was perceived by students across all three schools to be the keystone of student learning (or the lack of it). In the initial interview stages of the study, students complained that school administrators and teachers in particular were not receptive to students voicing their concerns about their learning. One girl commented: "We don't have a voice because teachers overrule, which sucks". Teachers were perceived as being overly concerned with issues of student control—the biggest barrier to what students believed could be a two-way communication system. As one student said:

> I think that teachers, like, these days don't let children have an opinion. They have to feel like they have control. I find that senior management would take the teacher's idea of the story over the kids and most of the time it's more of the kids that are right.

The processes used in the school system to have student voice heard were found to be too bureaucratic. As one student put it:

> I think even the student council like even though we have that, yeah, we haven't really achieved much because nothing's sort of happening in the school. Maybe it's just the fact that it has to filter through so many people. Because it has to go through departments and people and you're kind of the tail end, they're an authority over us.

While one student agreed with the need for student voice in schools, she was also concerned with how far it should go:

> I reckon a voice is good to a certain extent. You can't give all the kids all the power because adults will lose them but you can't then take away all the kids' power as well. Like, it needs to be balanced. I think, done tactfully, it can be a very good thing, but done badly it can be a very harmful thing.

All the students believed that they had much to contribute to school improvement, especially in areas affecting their own learning, but were not being given the chance. Students perceived that they would learn better if teachers recognised the best ways in which they learnt. In this sense, teachers had to take the role of learners and to learn from the very students they taught. As one student put it:

> I mean, you got to learn more and you are going to learn more if the teacher's teaching it to the best way you learn best. Everyone in class learns differently and it's good with this that the teacher knows different ways how we learn. Yeah, like the ideas we have given her and the comments we've made will help her realise what things we want, what environments we work best in.

They hoped that a better understanding of issues affecting students' learning could be achieved through teachers listening to their students:

> They'd have a better understanding of the issues that the students are going through. So I think if the teachers or the school people actually really listened to us, they can have a deeper, much clearer view and understanding of what we are going through in school.

At the initial stage of the study, only one of the three schools had students who believed that they had a system which thrived on student voice contributions. One student from the school said, "I think we feel free to approach the teachers if we have got an issue that we want to discuss with them. And we are always made to feel that way".

Students from all three schools pointed out that the consequences of ignoring student voices concerning learning were numerous, and included teachers talking past students and students forming walls of resistance to the teacher.

> I think it is very important, because if teachers don't care how we want to learn, then students are just going to ignore the teachers and just don't learn. I just think it is great that students can have more of a voice.

> What things we like and how we learn. Because if we don't like the way they teach us, we won't learn. And if we like the way they teach us, we will learn. Yeah, they will learn heaps from what we are thinking. If they listened to the students and, like, they will teach how the students want to be taught.

Diverse learning preferences

During initial, stimulated recall and exit interviews, students were able to reflect on how best they learnt. This metacognitive process was intended to bring students to understand processes affecting them as individual learners. As one student commented about the reflective exercise:

> Like, if students like thought about how they learn, they could learn better. It makes you think, like, not only the research, but how and like what you're learning and how, what your best style is, and it just prepares you for when you need to remember things and then you can understand your whole learning process and you're like 'okay, I understand better this way', and then you can use it.

Data revealed that merely copying work from the board did not enhance student learning. After studying their teachers for some time, students determined that they could afford not to pay attention in class if whatever they were doing would be followed up by copious amounts of notes, which they could refer to later. Students, however, conceded that they usually stored the notes away without much referring to them afterwards. As one student put it:

> For example in [subject], he writes up a biggest board full of work and that's all you do all period, just copy it out. And we copy it out and then he explains it. Oh, he explains it while we are copying it out, so I don't really pay attention while he is doing it because I am copying it out and then because I didn't read it, I just copied it out, I don't get it at all.

Some students felt it was better to organise their own notes rather than being spoon fed with large amounts of notes by the teacher that they often did not understand. Other students, however, perceived that getting notes from the teacher was good as they are able to refer to them later on, even if they did not understand the lesson.

> I like taking down notes because it's like, if like you know during the class you can't have like, can't concentrate, you know you've got the notes so when you go back home and you've got something to study and make up for lost time.

Students wanted the teacher to engage them in ways that would allow them to find information themselves (especially discovery methods), to make mistakes, and to learn from the mistakes:

> I learn more when I make a mistake, because then you can see what you did wrong and you can go back and change it. Yeah, because sometimes when you do it the first time you will get it right, but you do not know how you got it, sometimes it's by accident you would have done it. We sort of taught ourselves a bit and learnt our own things.

Many students said that they learnt better when the tasks involved some practical application as opposed to situations where everything was theoretical. As one student put it, "Make sure that we do instead of talking and stuff and do other things, you know, hands on things, get the books out, do some activities, stuff like that". Practical tasks were preferred because students found it easier to remember the task. This was supported by another student who said:

> Yeah, hands on. I find that easy to learn because it's more of a hands-on when you do it, like the coach is like go over there and go there, and so when you can see it happening you get the idea of it.

In choosing discussion or working groups, students pointed out that not every group worked for them, as there were issues of compatibility to be considered. They argued that teachers needed to consider carefully how they grouped students and be sensitive to people's differences "because it's much more productive when people get along."

> I reckon also the people you don't normally work with because teachers do it so often and it does not help and they think it helps because you put naughty people with the people who are quiet, it doesn't work, because you all sit there going 'okay', you know, you're nervous, you don't want to say what you're thinking and stuff. Whereas when you're with people you're comfortable with, you do say whatever you want. So, I reckon that's like bad and teachers shouldn't do that. You're actually putting people out of their comfort zone so they won't learn because they're so nervous of the situation they're in.

Another student thought that a learner may be put in a group with people who do not want to work, which would also affect their enthusiasm. She said, "Yeah, to sit with two people who don't want to work, it's quite hard to work yourself. Sometimes I think you learn less in groups because people are talking about stuff that doesn't actually relate to the topic".

Students who misbehaved were perceived as making it difficult for others to concentrate in class. For example, one student complained that "I think other students, too, can make it difficult, like naughty students can sort of waste teachers' time or you can get distracted in class".

In spite of identifying the pitfalls of group work, most students agreed that peer collaboration yielded better results in learning than going it alone. One girl said she liked group work because "everyone's sort of contributing, I just work better then". Many students perceived that it was easier to understand something through teaching it to other students: "I find that if I teach someone

something, I learn it easier, way easier". Learning with and from friends was a popular and commonly used strategy:

> I have a friend explain it to me and yeah, it like clicks and I get it. Usually your friends can relate to you because they know how to explain it to you in a way that you would understand. When X and me started talking about what we were supposed to do, we both were on the same level of understanding and it was easier to learn.

Attitude toward subject/learning

Some problems faced by students in their learning were attributable to their own attitudes towards the task or teacher. One student said, "If I can't be bothered, then I won't do it. Learning happens when I want to learn because if I don't want to, I won't". Another student said, "I couldn't be bothered because I just felt lazy". Other students, however, felt intrinsically motivated to work and excel in tasks. For example, one student who changed her performance in a subject through turning her attitude around said:

> I used to think that I was really bad in [subject], because I couldn't understand it, but from doing this research thing, I am really into it, if I want to listen. Like, if I go to my class saying in my head that I am going to do it, then I will. But if I go saying 'Oh no, I don't want to do it', then I won't.

For many students, if they did not have interest in a subject, they were unlikely to pursue it or to achieve in it. One student said: "I think the only reason I don't learn something is, well, because I'm not naturally interested in it". Another student said: "If you're not interested and you don't really care, like then it's hard". Students at the three schools perceived that learning became a lot easier if one had an interest in a task or subject.

> Probably things that interest you. I mean, like the things that you are interested in, you will be interested to study about them and the things that you're not interested in, it makes you think, 'Oh, I don't really care about this, why should I study for it?'

Teachers, on the other hand, were perceived to drown students' interest in tasks by their longwinded explanations during lessons: "If they're too long and not particularly interesting, umm, then you just sort of tune out. You don't even want to listen any more and that's when you get bored".

Self- and subject-efficacy beliefs of the student were perceived as important to student motivation and achievement. Past achievement in a particular task was perceived as building confidence in the learner for similar engagements in the future: "like your last test, you probably got merit or something and it makes you happy and you want to have that feeling, like it always makes you better". Teachers not only had to be comfortable with their subject matter but also to exude this confidence through the delivery of the lesson to the satisfaction of students. As one student pointed out: "Because they have taught this most of their teaching life, so for them it's like breathing air but for us it's like, 'Oh, my goodness, it's really hard'".

Many students believed that self-efficacy tended to build self-confidence in the learner, and many learners did not have self-confidence because they were not sure of their own abilities when confronted with a task. In some circumstances, students were afraid to ask for help from the teacher for fear of being reprimanded by other students for holding back the lesson. As one student put it:

> Yes, I think that we should be working, like one on one, like teachers should work one on one with their students because students would be afraid to ask for help because of the rest of the class, like they will say you're holding them back or something.

Some students felt that teachers who just nominated a student to answer a question in class without the student raising up his or her hand contributed to their subsequent withdrawal during lessons from fear of embarrassing themselves in front of other students when they did not know the answer. As

one student put it, "I think he should ask the class to put their hands up to answer the questions and not to just point to people, because people get embarrassed".

Relevance: prior knowledge and lived experience

The relevance of whatever is learnt in the school was brought under close scrutiny during stimulated recall and exit interviews. Students were adamant that learning was heavily influenced by whether they perceived the work to be relevant to their current life experiences or to their goals for the future. As one student put it:

> Yeah, relevant stuff we can use for our life rather than just try to learn for the lesson. We would rather learn something that is more relevant to us. It's like where you go after you finish, it's like what you want to do with your life so it's with you. Either throw it away or do well.

Students found it easier to learn something that they could relate to in some way, either through growing up or other experiences. One student commented:

> Background knowledge, like when you learn a totally new idea that you've never heard of before, that's hard. But if you're learning about something you've sort of known all your life, like speed, stuff like that, that makes it easier.

One student was aiming to be a worthy role model for members of her family in a recognised profession and said, "I want a good education to go far in life. Yeah, 'cause I want to be a doctor, I want to be an idol for my niece and nephew. I want them to look up to me, in a good way". Another student was motivated to study hard because she wanted to succeed and get a good job. She commented:

> My main goal is to succeed and get a good job and have a successful life. To get there you have to do well in school. I think learning your way through high school is like stepping stones for what you're going to do later on. It just builds on and on until you know whatever you're going to do.

Teacher organisation

Teacher organisation (or lack of it) was an issue that some students perceived affected their learning. During stimulated recall and exit interviews, some students said that teachers often came into the lesson seemingly out of touch with demands of the lesson. As one of the students put it, "It seems like she is not organised and she's like forgotten something and she'll go back and like put in, and 'Oh, I forgot to tell you you've got to do this as well'". This tended to confuse the students as to the fundamental goals of the lesson and the relative importance of various elements. Other teachers were found to sidetrack as a way of hiding their lack of preparedness.

At one school there was also general agreement among students that writing tests on Monday mornings or Friday afternoons did not bring the best out of them. Students said that they lacked focus when coming out of or going into a weekend: "Friday afternoons are bad because you're hypo and you want to leave. Monday mornings are bad because you're half asleep". One student suggested that it is equally unbeneficial to many students to have only external examinations. She suggested continuous assessment: "I reckon we should do more like internal, like testing after each topic instead of having the problem to remember it all and then do huge, big exams at the end of the year on it".

The importance of clarity

Students felt that most of their teachers did not explain things properly and that opportunities for learning were lost through both teachers and students speaking past each other. They thought that a good teacher was one who explained things clearly: "A good teacher is when they can explain to you in a way that you will understand". Another student said:

> Sometimes it's hard to learn something if the teacher is like, 'Oh, yeah, kind of' and leaves you in the dark about it, doesn't explain it in a way that you can understand. Like if they just explain it the way they understand, then that might be okay for them but you might not still get it and so they need to try again, sort of.

Other students, however, complained about teachers using long, winding explanations, frustrating most students who wanted to get going with their work. In most of these cases, students felt that lessons were left incomplete by teachers because they took too much time trying to explain things that were clear already. One student said:

> For me, the most important or the best way to keep me sort of tuned into what is being said is not take a long time to explain something. So, give a short explanation. The briefer the explanation, the more time you get to work, that's how I like to work.

Some students complained that teachers did not simplify work to the level of students' understanding and this hindered their grasp of concepts. They also perceived that if teachers used more examples for the same concept, students would learn better:

> When he comes up with a simple way of doing it, it will click. It's like a jigsaw puzzle, the piece will go in, he's got to find the right piece. The things that are easiest to learn are like if people like the teacher like show you an example, and explain it well and like how is it.

Through the stimulated recall interviews, some students in one largely Māori environment intimated that their learning was sometimes affected by their low comprehension of the English language. Since their learning was now in their own mother tongue, they had problems grappling with the English language translations and found more meaning through Māori. For example, one student said: "Sometimes the questions in these books, they're harder in English to understand so we just keep finding we have to change back to Māori and it's a bit more easier". Other students in the same class, however, found learning in both English and Māori rather confusing:

> It's like, hard. But we know what they're talking about, but it's hard to explain it in Māori because like different words that we haven't probably heard of before. Like we can see it in our head but we just see a picture, like with the answer but we just can't explain it properly.

Some students asserted during the initial and stimulated recall stages of the study that they had problems with foreign-trained teachers who had a limited grasp of English being given teaching positions in schools. These students said that they hardly understood what the teachers said in class: "Learning happens when I can understand the language, like X, he can't speak English properly".

Pacing of lessons

Most students saw the pacing of the lesson as important for them to understand the lesson. Most said that teachers moved too quickly from one concept to the next before they could understand the previous one. As the following comments show:

> I was sitting there waiting for him to get it over with because I didn't understand anything that was going on because he was just flying through it so quickly I never got a chance to even begin to understand what he was doing.

> He moves from topic so quickly and like we're just like asking him a question and someone starts talking and then sort of, doesn't talk about the same thing, he sort of moves on. You think he is just going to say a short thing and then he carries on.

Students believed that if teachers could slow the lesson down and take time to explain some things properly they would be in a position to understand and take a more active role in the lesson.

Feedback and reinforcement

The issue of feedback as a way of communication between teachers and students was mentioned as problematic in most classrooms. Students perceived that teachers took too long to mark students' work and give feedback. Students said they preferred prompt feedback: "It would be good if she could mark things faster". Some students suggested that teachers offer positive feedback, like praise, as a way of motivating their students to learn and avoid blunt and harmful statements. For example, one student in a stimulated recall interview said, "I learn when I am believed in" and another in an exit interview said:

> I think I pay more attention in [subject] because he actually encourages us when we do something right. Like if he didn't encourage us, there would be no reason for us to want to learn. But, he actually encourages us and says 'Oh, good job, well done'. It's like it makes you want to work because like if anyone gets praised it feels good.

Focus on NCEA assessments

One problem that we found affecting students' learning was the focus on achieving NCEA credits. It seemed in the three schools that students and teachers were focused on achieving unit standards to the exclusion of everything else. Where learning was not related to achieving credits, it was not considered important. As students revealed:

> In Year 13 we just want things to credit us, because that's what we're pressured to do, like graduate. Other stuff may get in the way of the other credits assignments and you just don't have the motivation to do it. You want the credits, you want to know that you're good enough to pass and stuff. If it's not credits, we're not going to bother, because we've got so much other things that are worth credits in other subjects … you are, like, what is the point of doing it?

Students were motivated to learn only to the extent that they achieved the required number of NCEA credits. This had the effect of shifting both teachers' and students' focus from building an all-round learner to narrow conceptions of learning that were no different from the previous examination-oriented system. Two students alluded to the system as too examination oriented:

> Because it's too credit oriented. Everyone, if it's not [a] credit then no one will, they'll do it but they won't care, because why, if they are not getting credits for it, why do it? I wouldn't do it, as soon as I get 15 credits for the subject, yeah that's sweet, because what is the point wasting time … when there's so much more to be taken from different subjects?

Lack of co-ordination among teachers

The students saw teachers as working like isolated islands, without any co-ordination to evaluate the amount of work they collectively gave students in a day. In the end, students found themselves swamped with work that they could not finish and this affected the quality of the work they produced. The problem was reflected in responses such as:

> You get bombarded with information. Teachers don't look at each other's subjects, they just give us all this homework and don't know that we've got 10 other assignments from different subjects. So it's really hard to keep on top of it.

Coherence between teachers' and students' conceptions of student learning

We argue that the way teachers conceptualise learning affects the way they engage with their students in making meaning during the teaching–learning process. Similarly, the way learning is epistemologically located as either reproducing or transforming knowledge has an effect on students' conception of knowledge as absolute, or provisional and continuously being shaped, and on encouraging deep or surface approaches to learning.

The study found that teachers' and students' conceptions of student learning in the three schools were remarkably coherent. This supports Brown's (2002a, 2002b) assertions that students conceive

learning as they have been socialised to believe by teachers. Our study did not find clear differences between teachers' and students' conceptions of student learning. This is contrary to the tensions found between secondary teachers and students in Brown's (2002a) study where students conceived learning as surface level mastery of information and facts while teachers perceived it as deep level mastery. In line with Bloom's (1956) taxonomy of educational objectives, the majority of teachers and students in our study perceived leaning as mere "memorizing and reproducing knowledge in ways acceptable to the teacher" (Entwistle, 2000, p. 2). Teachers and students both predominantly perceived learning in three categories, as:

- the acquisition and routine building of knowledge;

- comprehension; and

- the application of knowledge.

In all three schools, responses from both teachers and students prioritise surface level mastery of skills and facts. Responses in the first category revealed conceptions of student learning that focused on transmission of content and skills (teachers) and acquisition and reproduction of content and skills (students). This is similar to findings in an Australian study by Boulton-Lewis, Smith, Mcrindle, Burnett, and Campbell (2001). The view is reminiscent of the "banking" conception of education (Freire, 1970) and limits the learner as it encourages passive reception of knowledge and skills. The teacher is seen as the expert holder of knowledge and skills, which can be imparted to the learner only through instruction structured by the teacher. The learner on the other end of this knowledge transfer system is simply a repository or vault for the deposition of ready and processed knowledge, and not an agent for educational change. According to Entwistle (2000), this conception is grounded in surface level learning that seeks nothing more than reproduction or regurgitation of assimilated information.

Responses in the second category (learning as understanding) showed not only the concept of the transmission of content and skills by teachers, but that students were developing an understanding of task(s) through increased participation. There was also an element of student engagement in the learning process—they were seeking construction and comprehension of content and skills rather than merely soaking in information. In this category the focus was on the learner actively working with the teacher to construct meaning. Boulton-Lewis et al. (2001, p. 46) argue that the collaborative process involves more "thinking, questioning, discussing and making personal meaning". Fielding (1994) and Entwistle (2000) argue that if learning is to be more than reproduction or regurgitation of assimilated information—be transformative—then it must take the form of a shared undertaking between teachers and students in construction, understanding, consciousness, and application, with each assuming both roles.

Teacher and student data in category three (learning as application) revealed conceptions of learning that included not only the understanding of content and skills and the construction of personal meaning, but also the ability to apply these to new situations. Situated knowledge in the learner is transformed and applied to the real world. Responses in this category included elements of venturing out of the comfort of the known and taking risks in assessing the worth of existing knowledge and skills in new situations, with personal intellectual development for the learner. This category demands "active learning processes that involve relating ideas and looking for patterns and principles" and may be located in holist and serialist deep approaches to learning (Entwistle, 2000, p. 2). According to Daws (2005, p. 122), teachers working from this approach "look for what students can analyse, investigate, collaborate, share, build and generate based on what they already know, rather than what facts, skills and processes they can parrot". Carnell (2005) perceives this conception of learning as having "greater possibility for richer, more complex learning" through learner involvement and the development of the ability to judge what is important and transferable to different contexts.

In considering the data from teachers and students with respect to what they each perceived as supporting or constraining learning, we find similarities between them in some areas. Both teachers and students said that respectful relationships were extremely important in promoting learning. While teachers sought to know students and their needs, students sought support and encouragement from significant others such as teachers and parents. Both students and teachers perceived mutual respect as essential to the establishment of an effective learning environment. Students reported that their classroom expectations were not always met by teachers, whom they perceived as unwilling to engage with students individually and not aware of how students were responding to the lessons. Only a few teachers were able to "connect" with student expectations of making lessons fun, taking an interest, and supporting individual and group learner needs. While both teachers and students identified feedback as vital in supporting learning, students felt that the feedback they received was neither adequate nor timely.

Teachers and students generally agreed that effective teaching and learning took place when teachers were well prepared for the class and the lesson was implemented at an appropriate pace. Clear and effective communication was fundamental to learning. While many teachers in this study acknowledged that they did not always give clear instructions to students, all of them considered it was important to deliver information as clearly as possible so that students could act on it without teachers having to repeat themselves (as they were doing). Students, however, perceived teachers as missing their target by pitching the learning material either too high, making it impossible for students to understanding it, or too low, to the point of boring students. Students also preferred statements to short and to the point, unlike the longwinded instruction some teachers typically delivered. These comments support Brown (2002, p. 72), who contends that teachers and students in secondary schools "talk past each other" so that the message is lost through ambiguity or too much repetition.

The need for teachers to respond to the diversity of preferred learning preferences was a recurring theme in both student and teacher data. By eliciting in this study students' reflection on how they learnt best, we established that they preferred a variety of teacher approaches to lesson delivery in contrast to the routine note-taking methods that teachers predominantly used. Such teacher-dominated lessons can be seen as promoting the remembering and reproduction of facts and skills, which is consistent with surface level conceptions of learning. On the other hand, lessons that are more student centred, in which the teacher facilitates students' engagement with materials and problems, encourage discovery and greater control over and responsibility for their learning by students.

Both teachers and students agreed that learning became more relevant when students could make connections with prior knowledge and experiences, or it linked to the present or long-term aspirations of the learner. Both groups perceived learning as intrinsically and extrinsically motivated. Issues such as interest, self- and subject efficacy, and self-confidence were seen as critical for both teacher and student to complement each other's efforts in learning.

What was most apparent in the data on teachers' and students' perceptions of what supported and or constrained student learning was the degree to which teachers were unaware of when students were engaged, confused, or on track within their classes. The stimulated recall methodology adopted in this study enabled teachers to reconstruct lessons through the feedback and insights of their students.

How can reconstructed experiences of student learning inform the ongoing development of teachers' pedagogical practices?

Through this study teachers were able to see how students experienced their classes and the degree to which their own teaching and learning goals were understood by the students. Video-stimulated recall enabled both students and teachers to reconstruct the classroom experience in terms of what supported or constrained student learning. A new understanding of teaching and learning emerged as teachers became students of pedagogy, learning both from the students and their own reflections.

The students became partners in the teaching process, providing a useful resource for informing pedagogical practice. Both teachers and students agreed that their understanding of each other improved, resulting in better learning relationships. Students felt more actively involved in their own learning when their ideas fed teachers' classroom practice. For example, one student said, "I find in [subject] now, that we're saying things to Mr. X, he's trying to work on them, you have more of a responsibility to learn because you have asked for them".

As the study neared its end and both teachers and students had been made aware of the importance of student voice in school improvement and teacher practice, students from all three schools began to appreciate the results. In various subject areas students reported positive results from feeding their concerns about their learning to their teachers. The classroom atmosphere became relaxed. Students were able to communicate their concerns without fear and teachers responded by taking students' views seriously. This was seen as improving not only communication but also classroom teaching and learning, as the following responses suggest:

> Having a voice in [subject] class is really helpful because now you don't feel scared to tell the teacher 'I can't, I don't get you', because it's just helpful to understand the concepts in class.

> Yes, I think that X has changed her teaching because she must be listening to what we have to say and she has taken it in. I can see how she has changed her teaching style. How she talks more rather than just reading from a book.

> She puts work on the board now. She's explaining, she is telling us how to do things, this way, what is the proper way, and things like that … she gives us examples like to see how we think and she's started listening to answers, not saying no straight away.

Through these reconstructed experiences, the study found that when teachers are provided with ways of listening to students about learning teachers and students become co-learners and co-constructors of knowledge, and teachers "move away from curriculum as delivery to curriculum as joint making of meaning" (Fielding, 2001, pp. 127–128). This is supported by Cook-Sather (2002, p. 3), who argues that "authorising student perspectives can directly improve educational practice because when teachers listen to and learn from students, they begin to see the world from those students' perspectives … [and] when students are taken seriously and attended to as knowledgeable participants in important conversations, they feel empowered and motivated to participate constructively in their education".

Teachers and students talking past each other through ambiguous instruction, unclear explanations, and lessons pitched to the wrong level present classroom problems. Exploring ways in which students' voices can be more readily incorporated into classroom planning may provide solutions. It was clear in this study that teachers and students were previously unaware that they were frequently talking past each other. They recognised that improved communication in an atmosphere of tolerance and understanding would build a sound working relationship between teachers and students between the two:

> I think it's like, sort of, made the relationship between the teacher and the student when it comes to learning a bit more understandable. So, you come to a term where you can agree on and move on from there. We understand each other better, get along, and we feel more free to tell her if we think that she might be able to do something better—and hopefully, the same way with us.

Enabling teachers to hear, listen to, and reflect upon the feedback and insights of students about the teaching and learning within their classrooms provided a process through which student voice could be acknowledged and incorporated. When students talk about what affects their learning and teachers listen and implement the suggestions, the co-constructed knowledge is bound to shape new practice. The challenge, according to Le Cornu and Peters (2005, p. 61), is for teacher and students, and students and students, to "learn from and with each other" and have a "shared language for learning" (p. 56). This is supported by Cochran-Smith (2003, p. 9), who argues that effective

learning involves both teachers and students "learning new knowledge, question and practice, and at the same time, unlearning some long held ideas, beliefs and practices, which are often difficult to uproot".

In this study we found that classroom atmosphere and conditions affected how learning took place. Students could "connect" with teachers who were friendly, used humour, and took a personal interest in the learners and their contribution. Classroom teachers could take a pointer from students' views in this study on the kind of teacher they see as supporting student engagement and learning. Teachers and students in this study generally agreed that "people perceive and process information in qualitatively different ways" (Fielding, 1994, p. 2). The study found that many students were dissatisfied with the routine procedures typically used in lesson delivery and there was no doubt that both teachers and students saw benefits in employing a range of teaching and learning experiences. This is supported in the literature, as Beresford (1999, pp. 4–5) argues: "The employment of such a range of teaching strategies is likely to impact upon a greater number of students than the use of a more limited number of such strategies". Our own research found that, although students were in favour of a variety of teaching and learning strategies, they had a clear preference for problem solving, discussion, and practical activity rather than copious note taking. This supports Rudduck, Chaplain, and Wallace (1996) and Beresford (1999), who found that students' preference for less written work ran across different age groups.

Students in this study voiced preferences for more problem-solving and activity-centred learning experiences. Meeting these preferences calls for teachers to help student enquiry by employing open-ended questioning, involving students in experiments, and tolerating ambiguity. In order to lay the ground for learning to take place, teachers need to adopt a facilitator role, provide support, use no blame, and give constructive feedback on students' good thinking, rather than simply on right answers. Such strategies are supported by Daws (2005, p. 119), who argues that creative teaching should involve teacher approaches that "encourage creativity through behaviours such as asking open-ended questions, tolerating ambiguity, modelling creative thinking and behaviour, encouraging experimentation and persistence, and praising children who provide unexpected answers". In their research for the constructivist Learning to Learn project in Australia, Foster, Le Cornu, Peters, and Shim (2002, p. 3) argue that effective teaching should seek "pedagogy which elicits generative thought and creativity".

We also perceive collaboration in learning between teacher and student, and student and student, as vital to and supportive of the new drive for co-construction of knowledge. Fielding (2001, p. 130) argues that 21st-century curriculum planning must have aspects of openness, co-engagement, and flexibility reminiscent of "dialogic forms of democratic practice" that recognise that "teacher learning is both enabled and enhanced by dialogic encounters with their students". Thus learning, according to Fielding (1994, p. 18), becomes "a shared undertaking in which students and teachers are at different times and simultaneously learners and teachers of themselves and each other"—because the students are part of the new negotiated common classroom understandings, they become more responsible for their own learning. Daws (2005, p. 111) argues that for everyone to benefit from the "reciprocal learning process, it is important for teachers to consider themselves as active learners as well". When they listen to their students, teachers identify themselves as active learners intent on reconstructing their practice for the benefit of all learners.

Conclusion

According to Giroux (1983), arriving at meaning—whether individually or collectively, within the classroom or beyond—is contested terrain, as a result of dynamic interactions between competing discourses. Various groups bring "their own needs, wants desires and intentions" to the negotiating table and struggle constantly to have them included (Allard & Cooper, 2001, p. 154). In this study we saw teachers and students co-operating to establish classroom learning cultures and a new language of learning that would "suit their individual and collective purposes" (Allard & Cooper,

2001, p. 155). From the evidence provided in this research, in order to make teaching less alienating and more closely related to students' learning preferences schools need to listen closely to what students say and examine it in the light of established education practices. As Beresford (1999, p. 322) argues: "For effective learning to take place, teachers need to be knowledgeable about the learning repertoire of their students, and mindful of the need both to cater for and to expand that repertoire". Schooling is a learning partnership in which students and teachers "work together in ways that emphasis the sharing of the teaching–learning process. In this partnership there is learning from and with each other" (Le Cornu & Peters, 2005, p. 61).

This project, although located in just three schools and including only a few of the teachers in each, reinforces the importance of teachers and schools exploring ways to access and utilise students more effectively as authentic partners in teaching and learning. When students were able to step out of the role of mere recipients to engage in discussion on what promotes or stymies learning, they proved able and informed ambassadors of teaching and learning. Fielding (2001, p. 123) advises that the value of recognising student voice is mainly "to alert schools to shortcomings of their current performance and possible ways of addressing the deficiencies". He further points that the cost of ignoring such a voice is often catastrophic to learning and educational reform. This research project has demonstrated that students have a vital role to play in transforming the learning culture of the classroom and, potentially, the learning culture of the school.

5. Limitations of the project

The limitations faced by the research team were mainly caused by limited time, for the teachers, the students, and the researchers. Research within schools committed to building partnerships between researchers and practitioners is very time intensive and requires special skills and dispositions to ensure its success. Central to this is the recognition that researchers and teachers will have different roles in the research partnership and, while working collaboratively, will not necessarily be giving equivalent time to the project. Teachers will always first and foremost be committed to their work with students. Researchers typically have multiple responsibilities in teaching, research, and administration. However, both partners bring specific skills, knowledge, and experience to the project, contributions that when complementary ensure a stronger, more coherent project.

The challenges for a research project such as this, and indeed for the TLRI, is to ensure that projects make most effective use of partners' strengths, provide adequate time for the work to have a lasting impact on teaching and learning and, ultimately, be disseminated to the appropriate teaching and research communities. The practical constraints imposed by these objectives may well mean that projects are small in terms of the numbers of participating schools and teachers. However, if funds are invested in qualitative research of this nature it is important that projects are not constrained by being assessed according to criteria from the positivist paradigm. It may well happen that, initially at least, projects influence the teaching and learning experiences of only the participating teachers and students.

The specific limitations encountered in this project are presented below, followed by some recommendations for future research and the ways in which the TLRI might play a role.

Classroom-based research is resource intensive

Classroom-based research such as that described in this report requires significant input in terms of human resources and equipment. The design required the researchers to work with teachers individually over a number of weeks, examining their videotapes and discussing their responses to student feedback. In any school term, one field researcher can work effectively with four or five teachers only. Consequently, the impact of the research is restricted and pedagogical change, although powerful in single cases, does not necessarily lead to wider school reform. In hindsight, we would schedule the research in only two schools, working alongside teachers for a full year to enable a rolling implementation of the research across a critical mass of teachers and students within the school and providing time to ensure that the management, teachers, and students gained full ownership of the processes and strategies.

This project required video recording and viewing equipment on a daily basis, data storage capacity, and a private dedicated space for the researcher to conduct her work. The TLRI project funds were not to be used for the purchase of equipment that was essential for the success of this research programme. Equipment was purchased using Ruth Kane's professional research funds through the Department of Technology and Mathematics Education, and the Massey University College of Education's equipment committee. It is essential that research projects such as these have the support of internal university funds for the purchase of necessary equipment.

Time for critical reflection

Teachers are busy people, and the research project was often at the bottom of a long list of competing priorities. Teachers found it difficult to take the time to reflect on the student feedback and record their thoughts in journals. While teacher release days address this problem to some degree, some teachers did not make use of this allocated time. What are required are scheduled

regular meetings of 2–3 hours in which researchers and participating teachers take careful account of the data and examine what they mean to them and their practice. Such time for thinking, dialogue, and sharing is essential to the success of such projects.

Being open to unexpected research directions

While a research project is guided by specific research questions, it is not uncommon for wider findings to emerge. The time researchers spent in the school and working with students allowed students not only to give feedback on teachers' classroom practice as it related to student learning, but also to provide feedback on issues that were important to them in the wider school experience. At the request of the students, such issues were brought to the attention of senior school management (the assistant principal listened to focus group sound files, with the assistance of the field-based researcher). As a result, school management is able to draw on unexpected research findings to focus discussion with students and among staff about many aspects of the school experience.

Determining the ideal structure of research design

School-based research is by definition context specific, as each school and each classroom has its own dynamics and ways of operating. Through the course of the project it became apparent that the cycles of stimulated recall interviews had a limited effective life. After a number of cycles students began to offer reflections and feedback in focus groups without the support of viewing the video recording. After working in School A we determined that five cycles of stimulated recall were sufficient to enable students to become comfortable with providing critical feedback on their lessons. This was useful in the subsequent schools, and demonstrated that after a period of intensive supported research over one school term teachers and students could collaboratively negotiate ongoing approaches to providing reflective feedback.

Learning journals

At the beginning of the research the use of learning journals with students was not particularly successful. Students who felt overburdened with schoolwork found it difficult to motivate themselves to write in their learning journals when their priorities were assessment tasks. As the research progressed the guidelines for student entries in the learning journals were amended a number of times to become more structured and user friendly. The final edition, which included pre-printed questions as prompts, was used by nearly all the students who took part in the project. They enjoyed filling them out rather than finding it to be an extra chore.

Recommendations for future work and how the TLRI could be involved

1. *School support.* The early establishment of support from school management, together with their commitment to the project and to supporting staff and student participation, is essential to school-based research.

2. *Time.* Classroom-based research that will have a lasting impact on teachers' practice and student learning needs to plan for extended periods of time in schools. This involves working in an intensive way with individual teachers (and students) for a significant period of time (e.g., a school term) and then in a supportive mentor role to ensure that goals and practices identified by the research have been adopted into classroom practice. For the change to be school wide, such research would need to extend to other groups of teachers, over the full school year and possibly beyond.

3. When assessing proposed projects for TLRI funding, the selection panel needs to consider whether sufficient time has been dedicated to the preparation needed to establish the research partnership, protocols, and realistic roles and responsibilities of the research partners.

4. Proposals for qualitative projects based in a limited number of schools need to prepare strategies for reaching beyond the research participants to inform the wider teaching and research communities.

6. Contribution to building capability and capacity

Research collaborators

Massey University

Professor Ruth G. Kane	Project Director
Nicola Maw	Researcher
Christopher Chimwayange	Research Assistant

Longburn Adventist College

Teacher	Students
Julene Kapao	Ms Kapao's Y12 English class, including: Amanda Delport; Ben Harris; Luke McFarlane; Janna Mondares
Ingrid Heyns	Ms Heyns' English for academic purposes class, including: Elodie Galinie; Sheung Joon Shim; Soosil Shim; Yoo Jin Song; Josateki Waqatairewa
Paul de Ville	Mr de Ville's Y11 geography class, including: James Manusauloa; Henry Seymour; Jono VanEchten; Kate White
Catriona Righton	Ms Righton's Y12 chemistry class, including: Sanjay David; Ben Ma; Melanie Mylvaganam
Tom Lin	Mr Lin's Y11 mathematics class, including: Emar Kiwara-Carse; Sarah McLeod; Craig Parker; Abby Shaw
Jude Little	Ms Little's Y13 Bible class, including: Chrissy Henderson; Amy Ki-Korenhof; Karen Noble; Lisa VanEchten
Stan Walsh	Mr Walsh's Y12 physics class, including: Amelia Fukofuka; Ashley Muir; Karina Pearce; Josh Perry
Bruce Sharp	Mr Sharp's Y10 boys' English class, including: Anthony Bailey; Tony Davis; Luke Greaves; Josh Taylor
Anne Grayson	Ms Grayson's Y9 girls' English class, including: Sarah Boyd; Laura Crawford; Jessica Cullen; Kirsty McKenzie

Freyberg High School

Teacher	Students
David Lochhead	Mr Lochhead's Y11 economics class, including: Ben Coley; Colin Leighton; Alistair Love; Jacob Williams
Steve Turpin	Mr Turpin's Y10 art class, including: Charles Doey; Michael Harrington; Sophie Swan; Tammy Wilson
Tangi Utikere	Mr Utikere's Y11 history class, including: Nathan Doyle; Karl Robson; Jacob Williams
Geraldine Reynolds	Ms Reynolds' Y12 English class, including: Sidonie; Rebekah Callie;

	Kiri Ryniker; Jesse Wilson
Verity Elder	Ms Elder's Y11 art class, including: Erin Huia-Paton; Hollie Kellerman; Sarah Williams
Pene MacLachlan	Ms MacLachlan's Y10 integrated studies class

Turakina Maori Girls' College

Teacher	**Students**
Terehia Channings	Ms Channings Y10 rūmaki mathematics class, including: Sade Edmonds; Huia-Rose Hales; Leisa Hepi; Arianna Waller
Terri Totorewa	Ms Totorewa's Y9 social studies class, including: Jahlise Kingi; Zephyr McGregor; Katarina Tamehana-Tana; Ariana Toetoe
Heeni McAleese	Ms McAleese's Y9 English class, including: Sada Charlie; Rangimarie Cherrington; Hiria Henderson; Tyler Nolan

Capacity building

As is evident by the title of our research project—Making Sense of Secondary School: An Exploration *by* Teachers *with* Students—our intention was always a three-way partnership in which researchers, teachers, and students would bring together different viewpoints and expertise in an attempt to learn with and from each other. Students researched their own learning experiences and passed their reflections on to their teachers through video-stimulated recall focus groups. The teachers then reflected on both their own teaching experiences and the learning experiences of their students. University researchers assisted the teachers and students in their reflections by providing sound methodological processes and by supporting them through these processes.

The participating teachers were themselves the key researchers within this project. With assistance from the university researchers, teachers were introduced to ways in which they could explore their teaching practice and the learning of their students. This project also sought to move beyond students as a data source to engage them as active respondents and co-researchers.

The research team was based on partnerships through which team members were provided with opportunities to "learn from each other's expertise and located the teachers 'inside', as producers of knowledge about teaching and learning, not as the receivers of the research" (Oliver, 2005, p.1). Students were also located "inside" as experts on their own learning, while researchers were located, and welcomed, "inside" the school.

If we take Elliot's (1991) posit that teaching as educational practice is not based simply on the quality of its educational outcomes but on the educational process that fosters the educational outcomes in terms of student learning, then it is not only the research outcomes that have value, but also participation in the research processes.

This research project has contributed to building capacity and capability across three key groups of participants: students, teachers, and researchers. In the coming months conference presentations and scholarly publications will broaden the practice value of this work to other practitioners and researchers and will continue to contribute to the cumulative body of research-based knowledge linking teaching and learning.

The research project has met the key aim of Principle Six of the TLRI by building the capability of:

- students, to gain experience as co-researchers and contribute to extending understandings of teaching and learning;
- teachers, to improve their teaching practice and to gain expertise as teacher-researchers; and

- researchers, to undertake high-quality research and to deepen their understandings of teaching and learning.

The students

Students as researchers

There is a growing body of work on students as researchers (Fielding, 2001; Fielding & Bragg, 2003; Groundwater-Smith & Hunter, 2000; Oldfather, 1995; Raymond; 2001; Soo Hoo, 1993). Such research advocates for students to be recognised as participants and change agents, with shared responsibility for their learning environment. This project afforded students the experience of engaging in research with teachers and researchers, enabling them to gain a more complex understanding of the teaching and learning process. Although students took time to develop and feel comfortable with a language that would explain their own learning processes, the findings reveal that, when satisfied that they would be taken seriously, participating students demonstrated increasing capacity to provide informed comment and critical insights into the teaching and learning process. Their capacity to engage in purposeful dialogue on teaching and learning, the factors that support or act as barriers to their learning, and the ways in which teachers can better meet their needs as learners was evident as the project progressed. Students extended their capacity as researchers through collaborating in conference presentations and participating with teachers and teacher educators in professional forums such as the Secondary Futures Workshops.

The changing position of students in the research project

The students in this project were originally positioned as active respondents being consulted on the teaching and learning process (see Figure 1). During the research their position shifted to that of co-researchers actively engaged in dialogue with teachers and researchers. In School A in particular, students took this opportunity to become researchers in their own right, establishing the Student Voice for Learning group (which is supported by a part-time teacher and remains active within the school).

> If you have a student voice, obviously you'd have the say, but then there's also the fact that you have to achieve it. If you say something, you've got to do it, even if it's the slightest bit of improvement. You've go to take action.

> I am learning that I need a visual aid to help reinforce the idea. I'm enjoying being in the focus group. It helps me see how to learn and what factors help me to learn. I like the fact that it will help other teachers and students in the future with their learning and teaching style.

Figure 1: **Approaches to working with students**

DATA	**DISCUSSION**	**DIALOGUE** (teacher-led)	**SIGNIFICANT VOICE** (student-led)
Students as **DATA SOURCE**	Students as **ACTIVE RESPONDENTS**	Students as **CO-RESEARCHERS**	Students as **RESEARCHERS**

(Raymond, 2001, p. 58)

Students as reflective learners

As reflective learners, students subjected their own learning to critical scrutiny. They reflected on what learning means to them, their learning preferences, and the conditions they perceived as

sustaining or constraining learning. They also reflected on teaching, classroom relationships, and external influences, and the effects these had on learning.

> The reason I take part in this research project is so I can get a better understanding of how I learn and work in class and to get an 'external' view of how I respond to different styles of learning, as well as distractions and things that put me off task.

Students as co-constructors of the teaching and learning experience

Students became more aware of the learning partnership in the classroom. They became co-constructors of their classrooms and learning experiences. By sharing with the teachers their own reflections on learning, they were able to assist the teacher in creating a learning environment and teaching styles that worked best for them. While, ultimately, the final decision on how to teach remained with the teachers, they gave thoughtful attention to the feedback from the students and took their suggestions seriously.

The students acknowledged that teachers' willingness to listen to their feedback meant a great deal to them, both as students and as individuals:

> You feel more close-knit and you can have more discussions and say things.

> You have to have a good support system as well. We have teachers who really want us to be heard.

Students as experts

This research positioned students as experts on their own learning. From the outset they were informed that there were three specific research questions that the university researchers and their teachers needed their help in answering. These three questions focused on how students understood learning and what they perceived supported or constrained their learning.

Alison Cook-Sather (2002), Associate Professor of Education and the Director of the Bryn Mawr-Haverford Education Program, developed a programme called Teaching and Learning Together. The programme is based on the premise that students should be positioned as experts on learning, and that by "positioning a diverse group of high school students as teacher educators both with pre-service teachers and in conversation with one another we could enact and model a different approach to teacher preparation" (Cook-Sather, 2002). Discussions with colleagues at the Massey University College of Education about Cook-Sather's work resulted in our incorporating findings of this research into the College of Education's programme.

Students from the research project have been invited to be guest lecturers in the Massey University College of Education's initial teacher education programme to talk with prospective teachers about teaching and learning from the perspective of secondary students. The students will share their experience of the project and present evidence on what serves as barriers or supports to learning within the classroom.

The teachers

Teachers as researchers

The cyclical nature of this research enabled the teachers to truly engage in research on their own teaching practice as a supported self-study. Through the structure offered by filming a lesson each week, viewing it, gaining feedback from students, and engaging in critical reflection before moving on to the next lesson, teachers were able to be responsive to the student feedback and examine the implications of their practice on student learning. Early cycles were used to decide how to carry out later cycles. This process enabled teachers to test and refine their emerging conceptions of teaching and learning in their classrooms.

I believe that the process would be relevant, helpful, even enlightening for all teachers to experience. If teachers were to reflect in the same way that we did, teaching and classrooms would be incredibly different.

Teachers as reflective practitioners

As reflective practitioners, teachers not only had opportunities for reflection-on-action but also, through the stimulated recall interviews, they were able to engage in delayed reflection-in-action (Schön, 1987). This research provided methods and support for participating teachers as they critically reflected on the processes and outcomes of teaching and learning in the classroom environment. The decision to take part in the research showed in itself a desire to investigate their own practice as a means of enhancing student learning:

> I want to evaluate my own teaching methods, techniques, and styles, and I also want to see whether what I'm doing in the classroom actually materialises in the student's learning. I am interested in how students learn in order to adjust my own teaching styles.

Teachers were able to engage in guided, supported self-study through revisiting the transcripts of their own interviews and the transcripts from the students' stimulated recall interviews. By considering these transcripts alongside their own reflections on the lesson, teachers were able to view their teaching practice from multiple perspectives and consider how their teaching was perceived by their students. Teacher-researcher meetings and learning journals were methods that were formally adopted to initiate and support teacher refection. For example, one teacher in the exit interview explained that: "The project initiated formal reflective practice in the teacher (me) rather than vague wondering".

The impact of the reflective strategies was most evident when teachers were asked to examine their own experience of the research process. In their final interviews teachers revealed how the research provided them with a structure and formal support through which they could investigate and improve their own pedagogical practice:

> Being involved in the research project has meant a lot to me. It has forced me to set time aside to do constructive and meaningful reflection on not only the lessons I prepare, [and] the teaching methodologies I use, but also the students in my class. I have put a lot more thought and time into the preparation of my lessons, trying to cater better for the diverse needs of the students and to use a variety of activities to make it both interesting and more engaging for them.

Teachers as co-constructors of the teaching and learning experience

By accepting their students as knowledgeable in the areas of learning and teaching, teachers have explored a change in the balance of power in the classroom that enabled students to become co-constructors of their own classroom and learning experiences. The teachers' capacity for sharing decision making in the classroom has been extended and they now accept more readily that students can make a valuable contribution to how teaching and learning is negotiated within their classrooms.

> I've grown to be more open and aware of my students' needs. I've gained tools for interacting and making classroom learning relevant and interesting.

> I am much more aware of the student voice now. I am listening, even if just [to] a little comment I hear in a group like 'oh, this story sucks', or 'I don't even get this assignment'. I am constantly listening to those cues so I can address that student.

Teachers as students of pedagogy

The teachers' capacity to engage in critical dialogue about teaching and learning was supported through the research process. At the beginning of the project, both teachers and students were less than confident in discussing teaching and learning in anything other than descriptive ways. As the

research progressed and teachers developed more confidence in talking about teaching, the normally hidden assumptions underpinning their teaching, their "default" teaching practices, and the ways in which their classroom actions affected student learning. Teachers demonstrated increased capacity to view teaching and learning from alternative perspectives, to question the consequences of their in-class decisions, and to deconstruct classroom interactions in light of the students' reflections.

> I've spent a fair bit of time this year not only critiquing myself but actually coming to accept what the critique of the students is and listening to and dialoguing with the students. You always heard them, but you didn't necessarily listen. But when you have it on paper in front of you, and when it's on video going in front of you, you can't ignore it, you see yourself in a slightly different light.

Teachers began to look to additional research readings provided by the university researchers and to consider these in light of their own critique of their teaching and the feedback provided by the students. Teachers acknowledged that often their lessons were driven primarily by what they perceived as the curriculum—the content they were required to cover—rather than a careful consideration of the students' needs and the most appropriate procedures to support learning.

> I don't always think as much about how I'm going to teach something as much as the content of what I'm teaching and I want to go back to being better at doing that.

> Being a part of this research has been life changing. I've spent time reflecting on my teaching practice, but more so on the students. The overall experience has impacted on me on many levels and I know that I will never teach the same, [or[think the same about students, and I will stop and listen a lot more to what is being said by my students. Although challenging and personally revealing, I'd still do it all over again.

The researchers

Researchers as participants

In terms of building capacity and capability, it is clear that this research project has provided an opportunity for the university-based researchers to further develop their own research skills, extend their understandings of the teaching and learning relationship within secondary school classrooms, and examine this within a framework of contemporary literature and research. Researchers have also been able to reflect on the research process and, through the challenges they encountered, identify areas that need to be given special attention in future research projects (see Section 5: Limitations of the Project).

The researcher as participant observer

Of particular value to the university researcher is to be welcomed into the school as part of the staff and into aspects of its day-to-day community. Such practices allow the field-based researcher to become a participant observer within the research process and be accepted more readily by teachers and students—which contributes significantly to the establishment of critical research relationships.

> As an educational researcher I have visited many schools and educational institutions. As a general rule these visits are only for a day or two, often only for a couple of hours. This project has enabled me to spend an entire term in a school, interacting with the staff and students on a daily basis. It has enabled me to build up relationships with the staff and students to the point where they feel comfortable sharing all of their ideas about teaching and learning with me in both formal and informal settings. I believe that my time in this school has made me a better researcher. (Nicola Maw)

The researcher as project director

The management and supervision of a school-based research project involves seeking to reconcile often competing agendas. There are the demands of the researcher's university position—including research, scholarship, and teaching—and the demands of working with and within secondary school contexts, which prioritise teaching and student learning. Considering the project in light of the TLRI principles I am confident that it has contributed significantly in terms of strategic, research, and practice values.

In particular, the findings of this project have contributed to a better understanding of the processes of teaching and learning through examining the strengths and weaknesses of the participating teachers' pedagogical practices from the perspectives of both teachers and students (Principle One). By building on the work of other researchers in the field we have also been able to explore current and future possibilities of the role students can play in enhancing teaching and learning in secondary school contexts (Principles Two and Three). Emerging data have been subjected to rigorous analysis to determine findings that contribute to advancing our understanding of the complex nature of teaching and learning in secondary classrooms, and the ways in which both teachers and students can contribute to pedagogical reform to enhance learning (Principle Four). The participating teachers and improving their classroom practice are at the focus of this research project. The findings demonstrate changes in pedagogy that are supported by both teacher and student evidence (Principle Five). On reflection, it is clear that the research project, while challenging at times, has advanced understanding of the theory and practice of teaching and learning. Its findings have been utilised to inform both classroom and school practices in participating secondary schools and teacher education programmes at Massey University.

> This project has been challenging in more ways than one—the immense responsibility for leading a project so that it is rigorous in research, contributes to what is known about learning, while simultaneously ensuring it is relevant to the participating teachers and resisting the tendency to "do research on them!" The logistics have also been challenging. But, with all that said, the work Nikki is doing in school with both the teachers and the students, the excitement of working with teachers and hearing the ways in which they are making sense of learning and teaching, is enlightening. (Ruth Kane, midway through project)

7. References

Publications and presentations generated by this project

Refereed publications

Kane, R., & Maw, N. (2005). Making sense of learning at secondary school: Involving students to improve teaching practice. *Cambridge Journal of Education*, *35*(3), 311–322.

Conference presentations

Kane, R.G. (2006, January). *Making sense of learning: Researchers, teachers and students in partnership.* Paper presented at the annual conference of the Ontario Teachers Federation & Ontario Council of Deans of Education, Toronto.

Kane, R.G., & Maw, N. (2004, July). *Paying attention to students: Making sense of learning at secondary school through consultation in the classroom.* Paper presented at the biennial conference of the Teacher Education Forum of Aotearoa New Zealand (TEFANZ), Auckland College of Education, Auckland.

Kane, R.G., & Maw, N. (2004, August). *Making sense of learning in secondary classrooms: An exploration BY teachers, WITH students.* Paper presented at the annual conference of the British Educational Research Association (BERA), Manchester.

Kane, R.G., & Maw, N. (2005, July). *Building communities of learning through participation and respectful dialogue.* Paper presented at the biennial conference of the International Study Association of Teachers and Teaching (ISATT), Sydney.

Kane, R.G., Maw, N., de Ville, P., Kapao, J., Righton, C., Lin, T., et al. (2004, November). *Making sense of learning in secondary schools: Exploring perspectives of researchers, teachers and students.* A symposium presented at the annual conference of the New Zealand Association for Research in Education (NZARE), Wellington.

Professional meetings/presentations to professional groups

Maw, N. (2005, October). *Making sense of learning, student voice and formative assessment.* A seminar presentation to the Massey University College of Education Centre for Educational Development Assess to Learn (AtoL) group.

Kane, R.G., Walsh, S., Kapao, J., & Righton, C. (2004, September). *Building enhancing teaching practice through student feedback.* A workshop given at the Adventist Conference, Longburn Adventist College.

Kane, R.G., Maw, N., Kapao, J., Righton, C., Lin, T, Little, J., et al. (2005, May). *Making Sense of Learning Project: A report to our school and education community.* Presentation at a community meeting at Longburn Adventist College.

The Longburn Adventist College research team organised a presentation for their school community. Guests included; students, teachers, parents, the Associate Minister of Education, the Director and CEO of the New Zealand Teachers Council, the Director of NZCER, the Pro-vice Chancellor of Massey University College of Education, and other interested parties.

Other outputs generated by research project

2005—The principal of Longburn Adventist College submitted an article to the July 2005 edition of *North NewZ*, a publication of the North New Zealand Conference of the Seventh-day Adventist Church.

2005—Secondary Futures Workshop, Massey University.

Teachers and students who have been involved with the research from the three schools were invited to take part in a Secondary Futures Workshop. The workshop was held at the College of Education and was used as a way of getting teachers and students from all schools together and

illustrate the fact that others outside the research team were interested in what they had to say about teaching and learning. Letters of invitation were also sent out to principals of other Palmerston North secondary schools and a few other members of the Palmerston North educational community. Teachers and students from two of the research schools were able to participate. Staff and senior management from one other secondary school attended, along with colleagues from Massey University and the wider educational community.

2006—Invitation from Longburn Adventist College to field researcher and students to give guest lecture in the Massey University College of Education's Secondary Programme on the topic of student voice. The topic has now been included in the 4th Year Professional Inquiry and Practice course and the course controller would like to see it continue in years to come.

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