Final Report

Longitudinal Research on the Relationship between the NCEA and Student Motivation and Achievement

by

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Executive Summary

Longitudinal Research on the Relationships between NCEA and Student Motivation and Achievement was funded as a series of studies by a Ministry of Education research contract awarded to researchers at Victoria University in the Jessie Hetherington Centre for Educational Research and the School of Psychology. This multi-method project is the second phase of longitudinal research planned across multiple years to investigate the relationship between New Zealand's National Certificate of Educational Achievement (NCEA) and student motivation to learn.

Survey, interview and achievement data are reported for a large sample of students from 20 demographically representative secondary schools across the country. Students attending Years 10, 11 and 12 who participated in the previous study in 2005 were followed in Years 11, 12 and 13 in 2006 in order to examine relationships between 2005 motivation orientations, 2005 achievement results and 2006 achievement data. A follow-up of school leavers who had completed Year 13 in 2005 explores attitudes towards the NCEA in relationship to tertiary study in 2006-2007. A new student screening tool based on previous survey results was administered in 2006 to students in Years 10 and 11 at 18 schools; results for students in Year 11 were compared with previous Year 10 survey results and Year 11 achievement data in 2006. The influences of part-time work were examined in relationship to reported motivation orientations and achievement. Finally, parents, teachers, and students were interviewed from a range of schools located across the country, including *wharekura* and Auckland region schools.

Data from interviews, survey results, achievement records, and relationships between motivation orientations and achievement were analysed separately using the appropriate quantitative and qualitative methods. These were then reviewed collectively so that triangulated data sources informed one another prior to final interpretation. Of particular interest to this research is the longitudinal development of motivation orientations as a predictor of subsequent achievement and the extent to which knowledge of these student motivation orientations could be used to inform educational practice to enhance achievement.

This report extends our earlier findings regarding the relationship of key aspects of NCEA with student motivation orientations and achievement (Meyer, McClure, Walkey, McKenzie & Weir, 2006). Issues specific to NCEA that are of relevance to school efforts to maximise student motivation and academic performance are summarised, and strengths and concerns associated with design features of NCEA highlighted. Findings are generally consistent with motivation theory and research and add significant new evidence regarding the potential impact of school practice and student outcomes. Our longitudinal data also reveal areas for further investigation of motivation towards learning including continued development of a motivation screening tool reflective of New Zealand's cultural context.

Key Research Findings

In this section, we summarise key findings from our research on influences of aspects of the NCEA on student motivation and achievement. The first part highlights findings according to the original research questions, and the second part organises these findings by study.

Influences on Subject Choice

Students who reported they selected subjects based on their *Interest* in the subject or perceived *Utility/Importance* of the subject demonstrated significantly higher academic achievement at follow-up compared to those students selecting subjects for *External* reasons. During instruction from their teachers, students valued direct information regarding how subjects and tasks related to the real world, including possible future jobs and tertiary study. Students were more likely to note the relevance of subjects to tertiary study and University Entrance; they seemed less informed about the relevance of subjects to jobs and career pathways. Similarly, teachers were most likely to mention subjects relevant to future tertiary study and less likely to relate subjects and tasks to jobs and career pathways.

Influences of Part-Time Work

Relatively high percentages of students in Year 10 (32%) and Year 11 (41%) reported working part time. Of students working part time, those working 1-10 hours per week on average showed the most positive pattern of achievement. Those working more than 15 hours per week attained the highest number of unit standard credits overall but otherwise showed the least positive achievement pattern. Students reporting no part-time work showed fewer positive patterns of achievement than those who worked 1-15 hours weekly. Our findings are consistent with international research findings regarding a "threshold." That is, students working up to a certain number of hours show increasingly positive achievement results, while those working beyond the threshold number (e.g., 10 hours weekly) show increasingly negative achievement outcomes.

Relationship between Motivation Orientations and School Achievement

In 2006, we identified two motivation orientations to learning and learning tasks that were related to achievement as measured by the NCEA, which we labelled *Doing My Best* and *Doing Just Enough.* These two orientations were the strongest predictors of subsequent school achievement on the NCEA a year later and were also stable across a two-year period. Our follow-up analysis for the items identified to measure these two motivation orientations supports the predictive validity and utility of the screening tool. Students with a *Doing My Best* orientation recorded more total credits overall, more achievement standard credits, and more credits achieved with Merit and with Excellence. Students with a *Doing Just Enough* orientation recorded fewer credits overall, fewer achievement standards credits, fewer credits with Merit and with Excellence, more unit standard credits and more Not Attempted standards.

Attitudes towards Motivation and Achievement

Our focus group data suggest that teachers and parents at high decile schools were inclined to accept categorisation of students as poorly-motivated versus well-motivated as well as high, middle or low achieving groups. In contrast, preliminary focus group data from teachers and students at wharekura and low decile schools rejected categorizations and instead considered that all students can be motivated to do their best to achieve. These results suggest that teacher, parent and student attitudes about whether motivations can be changed are crucial to interventions to promote positive student achievement.

Relationships of Attributions to Achievement

Students who attributed their best work to internal factors of ability and effort showed the most positive achievement pattern overall and were most likely to report the *Doing My Best* orientation. Students reporting a *Doing Just Enough* orientation were more likely to attribute best marks to luck and worst marks to a lack of ability. They were more likely to attain credits with Achieved rather than Merit or Excellence. These findings for attributions are consistent with the self-serving bias said to be common in Western cultures whereby one takes credit for successes and attributes failure more to external causes. However, students showing the *Doing Just Enough* motivation orientation credit both success and failure to external causes. This suggests that they will have little motivation to exert more effort in future tasks and opportunities unless strategies are identified to change these motivations and attributions.

Attitudes on Aspects of Qualifications Design

Parents, teachers and students across our data sources continued to raise issues regarding grading practices, consistency, recognition of high achievement, and the nature of feedback to students. These data were collected prior to the announced changes to aspects of the qualification such as the endorsement of the Certificate for Merit and Excellence; increased moderation of internal assessment and endorsement of subjects for Merit and Excellence. The parity and equivalence of unit and achievement standards was seen as a challenge rather than an accomplishment. Again, the data were gathered prior to the announced review of unit standards. As we reported in 2006, internal assessment continued to be seen as a major strength of the NCEA in providing students with ongoing feedback on their learning as well as assisting them to structure their study workload throughout the year. Although ours was a small and non-representative sample, graduates who had gone on to tertiary degree study were strongly supportive of NCEA internal assessment component as having prepared them for assessment at University level.

Understandings about NCEA

Focus groups of Year 10 students in 2006 appeared to have more information about NCEA compared to Year 10 students in 2005. These students indicated that while their teachers and schools had made information available to them including sending materials home, most of their information came from older siblings and friends who had experienced the NCEA. They were

knowledgeable about the major features of the NCEA including credit requirements, subject choice, literacy and numeracy requirements, the availability of Merit and Excellence, and the incorporation of both internal and external assessments. When concerns were expressed, these related to grading anomalies (e.g., passing Excellence questions but failing for not passing an Achieved question); wanting more grade bands; and wanting more recognition for high achievement. There was less mention of media coverage in 2006-2007 in comparison to focus groups from 2005-2006, but when media coverage was mentioned they saw it as primarily negative.

Key Findings by Study

Study 1: Follow-Forward of Senior Students

The longitudinal findings in Study 1 are consistent with the cross-sectional findings in our previous report (Meyer et al., 2006). Those students demonstrating higher achievement outcomes in 2006 had, in the previous year, based their subject choices on interest, the importance of the subject and its utility for future career goals. They were also more motivated to do their best and get recognition. Those students demonstrating lower achievement outcomes in 2006 had, in the previous year, based their subject choices on external factors unrelated to usefulness or interest. They were motivated by doing just enough and work avoidance orientations. These findings suggest that students' attitudes to subject choice and motivation may have significant consequences for subsequent achievement.

Study 2: Follow-Forward of School Leavers

The sample in Study 2 is small and not representative, but it does show that students with positive motivations as Year 13 students in 2005 are mostly at University and advancing their education in 2006 and 2007. These students also stress that the internal assessment aspects of NCEA prepared them well for university assessment practices.

Study 3: Predicting Achievement from Motivation Orientations

Study 3 shows that a brief screening tool for student motivation not only correlates with the longer motivation survey developed by Meyer et al. (2006), but has high reliability and generates highly predictive results. The findings show that even with this short 8-item measure of motivation, the two motives of *Doing My Best* and *Doing Just Enough* are strong predictors of student achievement in NCEA, with *Doing My Best* predicting positive outcomes and *Doing Just Enough* predicting relatively negative performance. Aspects of our findings also support the development of an additional subscale to measure social and "belongingness" dimensions of motivation.

Further, our results show that these motivations relate to students' attributions for their performance in an English exam or test. Students who report *Doing My Best* attributed their best result to their own efforts and ability and discounted luck, whereas students motivated to *Do Just Enough* discounted the role of effort and ability and attribute their best result to luck. Students' attributions for their own results also had a direct relation to their actual

grades in NCEA. Students who attributed their results to their own effort and ability and discounted luck were the ones who gained more Merit and Excellence grades. The reverse pattern is shown for students who obtained more unit standards and more Achieved level grades. These findings show that students' perceptions of their own motivations and the causes of their success and failure are interconnected and relate to their actual outcomes. This short measure thus shows strong potential as a screening measure for students in order to tap those motivations and attitudes that hamper performance.

Study 3 also revealed that students engaged in moderate amounts of part-time work (1-10 hours per week) show a higher level of achievement than students doing no part-time work or students doing more than 10 hours part-time work per week.

Study 4: Attitudes towards Motivation, Achievement, and the NCEA

Study 4 largely replicates the findings from our 2006 research report and offers further support to the recently announced design changes to the NCEA to be effected in 2007 and 2008. There was widespread support for the internal assessment components of NCEA combined with external assessment, accompanied by suggestions regarding how to improve grading and feedback to students as well as the recognition of excellence. There was also support for subject choice and being able to choose standards. These findings can be juxtaposed with those from the graduate follow-up. School leavers similarly valued internal assessment but also raised the issues of ensuring that choice did not mean missing out critical subject knowledge needed for future endeavours such as university study.

Parents, teachers and students alike indicated that students selected subjects based on interest and the nature of the activities during instruction. Students additionally emphasised that better linkages between subjects and activities to future career and study goals, utility/importance issues, needed to be made directly by their teachers. There was a tendency for the parents and the teachers from higher decile schools to categorise students as either highly motivated or poorly motivated, rather than seeing motivation as a dynamic orientation that can be changed. Teachers and students from low decile schools and *wharekura* expressed a different perspective, seeing achievement as accessible to all students and motivation as a factor affected by the teaching and learning process. Nevertheless, pathways from school to the future beyond NCEA were not clearly articulated by any group other than the non-specific goal of attaining University Entrance. How NCEA could be tailored and utilised to plan for future careers and possibilities other than attending tertiary were not raised.

Introduction

Project Overview

This report describes four studies comprising a longitudinal investigation of the relationship between student achievement and student motivation orientations and attributions. This longitudinal research extends earlier research by following the previous year's student cohort and adding an additional cohort from the nationally representative school sample. Student surveys, interviews and achievement data along with parent and teacher focus group interviews provide evidence regarding the impact of aspects of the NCEA on academic achievement and attitudes (see Meyer, McClure, Walkey, McKenzie & Weir, 2006).

Longitudinal research linking student attitudes to actual achievement is key to investigating relationships between school practices and student behaviour and learning. This research will utilise and extend the initial database gathered in 2005-2006 to investigate these relationships across aspects of NCEA, actual student achievement over time, and student self-reports regarding their motivation orientation and study patterns.

Review of Recent Research on Motivation

There is a rich literature on the role of motivation in teaching and learning. Early in the 20th century, Dewey (1913) wrote about how teachers and schools can "catch" and "hold" student interest and effort to promote learning. Theorists have described the importance of individual as well as situational interest in subjects and academic tasks, with evidence that children and adults pay attention, persist, learn more, and enjoy learning activities when they are interested in the task (Ainley, 1994; Hidi & Harackiewicz, 2000; Renninger, 2000). White (1959) and Deci (1975; 1992) describe how approaches that make learning materials more challenging and provide students with greater choice and/or promote perceived autonomy and self-determination have been shown to enhance engagement.

Attributions for Success and Failure

The impact that student attributions for success and failure at school can have on motivation and achievement has also been documented (Weiner, 1985). If a student sees failure as having been caused by something that is difficult or even impossible to change, such as the difficulty level of the test or one's ability, this attribution has a negative impact on motivation and achievement. By contrast, if failure on a task or test is attributed to a lack of effort, this attribution may enhance the student's motivation to try harder on future tasks and is unlikely to lessen motivation. This pattern has also been demonstrated with New Zealand students (Fukui, 2006; Ng, McClure, Walkey & Hunt, 1995). The practical implication of Weiner's theory and research in this area is that when teachers see students struggling with new tasks, statements such as *"Keep trying, it's easy!"* can affect students negatively rather than encouraging

them. If they succeed on something the teacher said was "easy," the accomplishment has been devalued. If they fail, the message they are likely to receive is that they haven't the ability as, after all, the teacher said this was supposed to be easy. Thus, the most helpful thing to say would be *"This is a difficult task, you'll really have to work at it. Keep trying, and I'll check later to see if you need more help."*

Motivation and Goal Orientations

Self-perception of ability and the student's sense of self-efficacy are cornerstones of motivation theory (Meece, Eccles, & Wigfield, 1990). A student's attitudes about his or her competence, what kinds of achievement she/he values, and what if anything the student wishes to achieve including goals for the future are related in meaningful ways to academic achievement outcomes (Elliot & Dweck, 2005; Weiner, 1979; Weiner, 1992).

Academic performance is also influenced by student attitudes towards school and whether or not the student has future goals. School alienation accompanied by avoidance of work will impede ongoing adaptive engagement and study behaviours that might otherwise result in better learning outcomes (Nicholls, 1989; Nicholls, Cheung, Lauer, & Patashnick, 1989).

How learners approach academic tasks has been described in the literature as falling into either mastery oriented or performance oriented goal structures. Most recently, these have been further differentiated into approach and avoidance goals (Dweck, 2000; Dweck & Leggett, 1988; Pintrich, 2000). In mastery orientations, students strive to learn for its own sake and are said to be intrinsically motivated by the task and challenges. In performance orientations, students are more likely to respond to extrinsic rewards for high achievement and punishments, such as failure grades, for poor achievement.

While mastery orientations were seen originally as the more adaptive and desirable in contrast to performance orientations, recent work has demonstrated that both can have value. Performance-approach orientations may be particularly adaptive with new tasks, and most students seem to expect and to thrive on recognition for their work whether it be from teachers, parents or friends. There is also evidence that performance orientations can lead to adopting mastery orientations later in the learning sequence. Without necessarily having knowledge of this underpinning theory, rewarding achievement is common in New Zealand. Parents do promise their children rewards for doing well in school. Students in our focus groups mentioned many things ranging from money to surfing lessons, for example. Working towards concrete rewards may be a motivator for everyone at some time or another. Corrective feedback on student work can have important adaptive functions for students seeking to improve on the next task or endeavour (Elliot, 2005; Hidi & Harackiewicz, 2000; Linnebrink, 2005; Sideridis, 2005). It is now generally accepted that classroom assessment—what is labelled in New Zealand as "internal" assessment—followed by teacher feedback on student work can make a far more positive contribution to ongoing improvement in student achievement than end of the year "external" exams without specific individualised feedback to students (Hattie & Timperley, 2007).

Influences on Motivation and Achievement

Children's and adolescents' motivation orientations and their academic achievement can be influenced by the school environment, classroom practices, cultural factors, and how teachers teach (Anderson, Hattie, & Hamilton, 2005; Eccles, 2005; Eccles & Midgley, 1989; Eccles & Wigfield, 1995). A major rationale for the international shift from normative to criterion-referenced educational assessment has been to enhance student motivation to learn: Logic suggests that only students who expect to be top achievers would be motivated to do their best when final grades are dependent on how others perform. The learner has no control over how well others do, so mastery of subject matter knowledge is discouraged by a system that instead evaluates and grades in comparison to other students rather than in relationship to the criterion task. When grading criteria are connected to expected learning outcomes that are clearly communicated to students, they are optimally motivated as active learners making ongoing decisions about their own learning (Deevers, 2006; Farrington & Small, 2006).

Of course, educational assessment historically was not designed to provide feedback to students that they could then use to maximise their educational opportunities. Instead, assessment was designed to stratify achievement and sort students into those who would be directed to particular pathways and occupations. This included selecting out those deemed to be the "best and brightest" and destined for higher education and leadership in society (Farrington & Small, 2006; Tyack, 1974). The past few decades have instead seen an emphasis upon universal education and a valuing of raising achievement for all. Schools have been increasingly held accountable for demonstrating positive learning outcomes. While it was once regarded as acceptable for half of New Zealand young people to "fail" School Certificate after eleven years of compulsory schooling (the grade was normatively scaled so that half passed and half failed), this is no longer the case. Some now openly express concern at evidence that similar percentages of certain groups of students are more likely to leave school without any qualification (Gerritsen, 2007).

Motivation Towards Learning

Our earlier research on the impact of NCEA on student motivation showed a strong empirical relationship between student achievement outcomes and self-reported motivation orientations (Meyer et al., 2006). While we reported a number of factors and goal structures that seemed connected to achievement, the strongest predictors of actual academic outcomes as measured by the NCEA were student self ratings on two factors we labelled *Doing My Best* and *Doing Just Enough. Doing My Best* was the strongest positive predictor of higher grades as well as the total number of credits attained overall. These findings support previous empirical work. They are notable in their consistency with motivation theory and in the relationship of motivation dimensions to student performance on standards-based assessments across a wide range of secondary subjects.

However, our identification of *Doing My Best* and *Doing Just Enough* also extend existing research on motivation and achievement. In contrast to widespread interest in the literature on orientations such as mastery and performance goals, we were able to locate few constructs similar to those identified in our work. They appear to be most similar to early work by Salomon (1984) who explored self-reported effort and concentration. Recently, Brookhart and Durkin (2003) used Salomon's constructs as the basis for a measure of the "Amount of Invested Effort (AIME)", which reflects an intrapersonal investment in learning and a motivation to strive. McClelland, Atkinson, Clark, and Lowell (1953) had also earlier discussed the concept of an "achievement motive" as striving to do something as well as possible (see also McClelland, 1961; Plaut & Markus, 2005).

The concepts of *Doing My Best* and *Doing Just Enough* are not only strong predictors, but they have powerful face validity, popular appeal and are readily understood. Further, they relate to all students, subject areas, and achievement tasks. There is no particular reason why trying to do one's best would be applicable to only academic subjects; for example, this motivation orientation is equally important to prepare for a career in the trades and other areas that may not require tertiary study. Hence, the research described in this report investigates further the relationship between these and other motivation orientations and achievement, with a particular focus on determining which are best predictive of achievement over time.

Context of the Research

New Zealand's National Certificate of Educational Achievement (NCEA) is a standards-based assessment of student learning outcomes. It is designed to provide three levels of a national qualification for students in the final three years of secondary school. Various features of the qualification are innovative including opportunities for students to play a major role in decisions regarding how and what they study at secondary school. Another new feature of NCEA in comparison to past practices was extending the recording of internal (classroom) assessment results on the individual student's record of learning. While some internal assessment results were also included, the previous system emphasised recording external end-of-year national examinations on student records. As a criterion-referenced qualification, NCEA also represents a major policy shift from past practices that assessed students based on normative results such that a consistent percentage of students in secondary school would fail or pass based on how other students had performed.

The design and implementation of NCEA was developed and promoted over a period of more than a decade (Ministry of Education, 1999; Alison, 2005). Its implementation was intended to advance the attainment of qualifications by secondary students and document achievement of learning outcomes related to future goals such as further tertiary study and employment. A standards-based system such as NCEA was seen to be better suited to supporting learning for all students, rather than primarily those who were high achievers and performed well on norm-referenced external examinations. The theoretical underpinnings of NCEA were that it reflected a philosophical

commitment to learning by all students rather than accepting previous outcomes whereby a large percentage of New Zealand secondary students (more than 50%) left schools with no qualification and what was seen as too few skills for a successful and productive future. The flexibility in the accumulation of credits was also intended to promote student responsibility for making informed choices about their own study and becoming more independent as learners generally.

Since its initial implementation there have been periodic design modifications to the NCEA. These have been largely driven by evidence, including consistency challenges and the impact of aspects of the NCEA on student motivation, study behaviour and achievement outcomes. Harris (2007) summarised the most recent changes as follows:

- Endorsement of the Certificates: All 3 levels of NCEA will be awarded from 2007 with one of three possible endorsements—Achieved, Merit or Excellence
- Endorsement by Subject: From 2008, Merit and Excellence will also be recognised at subject level
- Results notices will include "Not Achieved" standards for both internal and external assessment results, extending the current situation where Not Achieved is noted only for external assessments
- NZQA will extend moderation of internally assessed standards to 10% of all internal assessments across schools using a team of full-time moderators from 2008 onwards
- All school leavers will receive a summary of results from their time at school
- The current "Record of Learning" will be renamed the "Record of Achievement"
- There will be a review of unit standards to examine overlap with achievement standards and credit parity, to be reported by early 2008
- NZQA and the Ministry of Education will align their review processes regarding unit and achievement standards (Harris, 2007, p.4).

Some of these changes are supported strongly by previous empirical research on student motivation and achievement, such as the incorporation of endorsement for Merit and Excellence for each level of the certificate in 2007 and for individual subjects in 2008 (Meyer et al., 2006). Similarly, the increased moderation of internal assessment addresses ongoing concerns about consistency in marking and grading criteria across schools. Further research would be needed to investigate whether these design changes are related to positive changes in student study behaviour and achievement as well as the attitudes and perceptions of key stakeholders such as parents and teachers.

Research Approach

Multiple Methods and Analysis Procedures

A multi-method research approach utilised both quantitative and qualitative analyses of data. This included student surveys, student focus groups, records of student achievement on the NCEA, individual graduate interviews, and parent and teacher focus groups. Triangulation of data were then analysed using mixed methods, both qualitative and quantitative as appropriate. This design ensured rich information regarding complex phenomena, such as our focus on student study behaviour and achievement (Creswell, 2005). Each data source (focus groups, individual interviews, and survey results) was first analysed separately using the appropriate quantitative and qualitative methods as described in this report. Prior to final interpretation and preparation of the key findings, all data sources were reviewed and interpreted collectively towards the identification of meaningful patterns of findings to inform further developments in educational practice.

Participants in the research included students, teachers and parents from 20 demographically representative secondary schools throughout the country. Students attending Years 10, 11 and 12 in 2005 who participated in the previous study were followed to Years 11, 12 and 13 in 2006 in order to examine relationships between 2005 motivation orientations, 2005 achievement results and 2006 achievement data. A new student screening tool was also administered late in 2006 to Years 10 and 11 students at 18 schools and examined for relationships to student achievement on NCEA for those students who participated in Level 1 in 2006 (generally those in Year 11). Descriptive statistics, factor analyses and multiple regression analyses were used to investigate meaningful relationships.

Teacher, parent and student focus groups were interviewed from a sub-sample of low and high decile secondary schools located on both the South and North Islands. *Wharekura* and Auckland region schools were included. A sub-sample of students from Year 13 in 2005 completed a survey and was interviewed a year after leaving school. Interview and focus group data were analysed using appropriate qualitative method for the identification of themes in relationship to findings in our earlier research and the recent literature. In addition, a partial-grounded theory approach was taken to investigate themes emerging from the new data across all interview questions.

Overview of the Four Studies

Study 1: Follow-Forward of 2006 NCEA Seniors: Students from Years 10, 11 and 12 in 2005 who consented to participation were followed to Years 11, 12 and 13 in 2006. Their 2006 NCEA results were obtained in early 2007 from NZQA to extend analyses of previous survey and achievement data by investigating relationships with 2006 achievement data.

Study 2: Follow-Forward of 2006 Graduates: Year 13 students who participated in the research in 2005 were contacted in 2006 and invited to complete a short questionnaire regarding their activities in 2007 and what they planned to do in 2008. In addition, a sub-sample was individually interviewed early in 2007.

Study 3: Development of a Screening Tool for Motivation Orientation: A short screening tool about motivation orientations comprising items most predictive of achievement was administered to Year 10 and Year 11 students at 18 of the original 20 schools that agreed to participate in this study. The predictive validity of the screening tool in relationship to student achievement was investigated for potential use in the design of intervention research to enhance student motivation and achievement.

Study 4: Focus Group Research on Motivation Orientations: Focus groups with students, teachers and parents were conducted to assist in the interpretation of research findings and to develop further longitudinal research plans, particularly with regard to the impact of various factors on student achievement and study behaviour.

Ethics Review and Approval

The research was reviewed and approved by the VUW Human Ethics Committee to ensure that ethical, privacy and confidentiality considerations at individual, school, institutional and national/international levels were addressed. This formal ethical review process protects those involved and minimises the potential for harm that is always present in any research with human participants.

Participants in the research were assured that data were confidential for those students who participated in Studies 1 and 3 and anonymous for student, teacher and parent participants in Studies 2 and 4. The confidentiality and anonymity of the data has been assured through coding systems, limited designated access to information by qualified project personnel only, and secure/locked data locations throughout the time period of the project and for any data kept longer. Informed and signed consent was obtained from all respondents in surveys, focus group and individual interviews. In addition, schools selected for the purposive sample were invited to participate, so that their involvement was active and positive. The identity of the 20 participating schools continues to be confidential to the project and will not be publicly revealed throughout the research or at any time in the future. Data will be disaggregated for various analyses but not described in research reports or website publications in such a way as to allow identification of individual schools or persons. This is important for the integrity of the research and for the ability to generalise the findings. If it was perceived that the results are atypical and unique to particular schools, the findings could have limited credibility in their application to ongoing policy and practice developments across the sector.

Study 1: 2005-2006 Follow-Forward of NCEA Seniors

This study examines longitudinal relationships across factors such as motivation orientations, attitudes towards aspects of the NCEA, and achievement on NCEA from year to year in order to identify meaningful patterns related to student motivation and achievement. Of particular interest to the project is the longitudinal development of motivation orientations as a predictor of subsequent achievement, along with the extent to which information on motivation orientations make an additional and valuable contribution over that contributed by prior achievement to predictions of future achievement.

School and Student Participants

A large number of students who were in Years 11 and 12 in 2005 gave their consent for participation in this longitudinal research component. For these students from the original 20 nationally representative schools, we have student survey data from 2005 and actual student achievement data on NCEA for both the years 2005 and 2006. Attrition was expected to be minimal on the assumption that students can be tracked using their National Student Numbers (NSNs) even if they move to another secondary school outside our original school sample but within New Zealand. Theoretically, achievement data for all participating students still in school would be available from NCEA records of learning in 2006.

Our original sample included a potential total of 2,830 Year 11 and 12 students for whom we had achievement and survey data from 2005. Students who had consented to participate were tracked using their NSNs to obtain the additional year of 2006 achievement data made available by NZQA from their individual Records of Learning for NCEA Levels 1-3 by early 2007. This process yielded the additional 2006 achievement data for 2,516 of these students enrolled in Years 12 and 13 in 2006.

No achievement data were available in the schools participating in the research for 314 of the students from the 2005 sample; whether these students have changed schools, left secondary school and/or subsequently enrolled in other programmes could be investigated in future research. For credit weighted grade average,[1] the score was missing for an additional 106 students.

[1] NZQA has calculated individual grade averages for subjects across all achievement standard results by multiplying the number of credits for each standard by 2 for a result of Achieved, 3 for a result of Merit, and 4 for a result of Excellence. These scores are then totalled and divided by the total number of credits in achievement standards for the subject/level multiplied by 400 (personal communication, Michael Johnston, 29 May 2007).

Data Analysis

Student achievement data for 2005 and for 2006 were analysed in relationship to student survey results from 2005. Additional analyses were undertaken to investigate the predictive validity of the sub-sample of items used in Study 3 regarding academic achievement across the two years.

The 2005 surveys are included in Appendices B and C, and the factors emerging from the analyses of the three sections of the survey are summarised in Table 1.

Table 1. 2005 student survey factors

Influences on subject choice	
Factor Name:	**Selecting a subject because of:**
Utility/Importance	How useful or important the subject is for a career or study goal
External	What my friends are taking; how easy it is; fitting my schedule
Interest	Personal interest in, and enjoyment of, the subject matter

How students think about their learning	
Factor Name:	**Approaching new learning to:**
Doing My Best	Do the best I can and be the best that I can be
Doing Just Enough	Do just enough to get by; do what I have to do but no more

Attitudes towards NCEA and assessment	
Factor Name:	**Preference for assessment that:**
Work Avoidance	Allows me to avoid work that I find difficult or don't like
Getting Feedback	Provides me with feedback on how I'm doing, what I did wrong, and what I should do differently next time
Getting Recognition	Leads to recognition for doing well, even if I have to do more than necessary

Findings

Relationship between Student Choices and Student Learning

The 2006 analysis results were similar to those from 2005 and are shown in Table 2. Selecting subjects based on the presumed *Utility* of the subject and personal *Interest* in the subject were both associated with higher achievement, including more total credits achieved, more achievement standards, and a slightly higher grade average. These patterns were also associated with fewer unit standards achieved. In contrast, selecting subjects based on *External* factors was associated with less total credits, less achievement standards, more unit standards, and a lower grade average score. As was the case in the previous year's results, all of these correlations ranged in strength from weak to moderate; none of the correlations were strong.

Table 2. Relationship of subject choice reasons with achievement results for 2006 (with 2005 correlations in parentheses).

	Total Credits	Unit Standards	Achievement Standards
Utility	.23*** (.16***)	-.09*** (-.12***)	.25*** (.20***)
External	-.23*** (-.25***)	.17*** (.16***)	-.29*** (-.30***)
Interest	.26*** (.26***)	-.14*** (-.12***)	.30*** (.28***)

	Grade of Achieved	Grade of Merit	Grade of Excellence	Grade Average
Utility	.15*** (.05**)	.21*** (.17***)	.16*** (.19***)	.14*** (.19***)
External	-.20*** (-.13***)	-.23*** (-.27***)	-.17*** (-.22***)	-.14*** (-.23***)
Interest	.20*** (.13***)	.25*** (.25***)	.18*** (.20***)	.17*** (.25***)

** = $p<.01$, *** = $p<.001$
(Note that lower *p* values indicate increasing confidence in the correlation.)

Relationship between Student Motivation and Student Learning

Also similar to the results of last year, the *Doing my Best* and *Doing Just Enough* orientations exhibited the strongest relationships with achievement outcomes. Specifically, *Doing My Best* was associated with more total credits, more achievement standard credits, a higher grade average (GA) and fewer unit standard credits. The reverse was true for *Doing Just Enough*. In relation to what students liked and disliked about NCEA, again, almost identical results were seen for the follow up achievement data. Higher endorsement of the *Work Avoidance* orientation was associated with fewer total credits achieved, more unit standards achieved, fewer achievement standards, and a lower GA score. The *Getting Feedback* orientation was unrelated to achievement outcomes at both time points. Finally, higher endorsement of the *Getting Recognition* factor was associated with more total credits gained, less unit standards, more achievement standards, and a higher GA score.

Table 3. Relationship of motivation orientations with achievement results for 2006 (with 2005 correlations in parentheses).

	Total Credits	Unit Standards	Achievement Standards
Doing My Best	.43*** (.40***)	-.23*** (-.22***)	.50*** (.46***)
Doing Just Enough	-.45*** (-.46***)	.29*** (.23***)	-.55*** (-.52***)
Work Avoidance	-.29*** (-.35***)	.23*** (.13***)	-.37*** (-.38***)
Getting Feedback	.01 (-.01)	.06** (.06***)	-.02 (-.04**)
Getting Recognition	.20*** (.12***)	-.12*** (-.12***)	.25*** (.17***)

	Grade of Achieved	Grade of Merit	Grade of Excellence	Grade Average
Doing My Best	.21*** (.06**)	.45*** (.45***)	.42*** (.46***)	.39*** (.46***)
Doing Just Enough	-.30*** (-.15***)	-.48*** (-.49***)	-.38*** (-.41***)	-.35*** (-.46***)
Work Avoidance	-.19*** (.10***)	-.31*** (-.35***)	-.28*** (-.32***)	-.25*** (-.33***)
Getting Feedback	.03 (.03*)	-.03 (-.05**)	-.05** (-.08***)	-.03 (-.04**)
Getting Recognition	.05** (-.06***)	.24*** (.18***)	.24*** (.24***)	.23*** (.21***)

*= p<.05, ** = p<.01, *** = p<.001
(Note that lower p values indicate increasing confidence in the correlation.)

Predicting Grade Averages

Grade average (GA) can also be examined as a predictor variable to compare results across the two years of data. In 2005, we found that factor scores for *Doing My Best* (β = .32, p <.001), and *Doing Just Enough* (β = -.25, p <.001) were the best predictors of GA scores, positive and negative respectively. Results for 2006 were similar. When the 2005 motivation orientations were used to predict 2006 achievement according to the grade average, once again the best positive and negative predictors, respectively, were student scores on the *Doing My Best* (β = .28, p <.001) and *Doing Just Enough* (β = -.20, p <.001). This regression explained 22% of the variance in GA scores.

Predicting grade average (credit weighted grade average for achievement standards) scores separately for each gender

Separate regression analyses, one for males and one for females, were carried out to test whether particular motivation orientations were the best predictors for both genders. For males, *Subject Choice* factors and *Work*

Avoidance did not predict achievement in 2006; the best predictors were *Doing My Best* and *Doing Just Enough*, followed by *Getting Recognition* and *Getting Feedback*. Together, these variables explained 19% of the variance contributing to achievement results.

Table 4. Multiple regression analyses for males and females using 2005 motivation orientations to predict 2006 GA scores.

	Male β	Female β
Utility	-.03	-.19***
External	.05	.07*
Interest	.03	.15***
Doing My Best	.22***	.35***
Doing Just Enough	-.22***	-.17***
Work Avoidance	-.07	-.05
Getting Feedback	-.08*	-.13***
Getting Recognition	.13***	.10***

* = p<.05, *** = p<.001

For females, results differed slightly. *Subject Choice* factors were significant (albeit weak) predictors of achievement, and *Doing My Best* was the strongest predictor, stronger than that for males. A similar effect for *Getting Feedback* and *Getting Recognition* was obtained. These factors explained 24% of the variance contributing to achievement results.

Predicting GA (Credit weighted grade average for achievement standards) scores separately by ethnicity

These analyses were repeated for different ethnic groups. For NZ Europeans, results were similar to those obtained for girls overall, with the *Doing My Best* orientation explaining 26% of the variance contributing to achievement results, being easily the best predictor (see Table 5).

Table 5. Multiple regression analysis for NZ European students using 2005 motivation orientations to predict 2006 GA scores by ethnicity.

	European β	Asian β	Māori β	Pasifika β
Utility	-.12***	-.11***	.07	-.13
External	.09***	.05	.03	.09
Interest	.10***	.14**	-.13	.20*
Doing My Best	.33***	.27***	.13	.15
Doing Just Enough	-.20***	-.25***	-.19	.06
Work Avoidance	-.06	-.06	.02	-.06
Getting Feedback	-.06*	-.18***	<.01	-.03
Getting Recognition	.12***	.14**	-.02	-.04

* = p<.05, ** = p<.01, *** = p<.001

For Asian students, the result was more similar to the males overall, with *Subject Choice* factors showing minimal relationship to achievement and *Doing My Best* and *Doing Just Enough* showing similar relationships. These factors explained 24% of the variance contributing to achievement results.

In contrast to the results obtained for NZ European and Asian students, the motivation orientations as measured on our surveys predicted a lower percentage of the variance for selected measures of achievement at follow-up for Māori and Pasifika students. For example, with Māori students, the overall regression equation was not significant, with $p = .20$, and only 2% of variance explained. Further work is needed to investigate motivational orientations that serve as significant predictors of achievement for Māori and Pasifika students in particular.

Similarly, for Pasifika students the overall regression equation was again not significant ($p = .36$, and only 5% of variance explained). The only significant predictor of later achievement results was *Interest*, indicating that higher achievement in Pasifika students was positively related to selecting subjects according to personal interest in the subject.

Our sample sizes for both Māori (N = 182) and Pasifika (N = 179) students were sufficiently large to generate the statistical power needed to investigate meaningful relationships between self-reported attitudes and actual achievement. It would therefore appear that we have not to date captured all the relevant motivation dimensions for students. There may be other important motivation orientations related to achievement for these and other cultural groups.

Summary of Study 1 Findings

The longitudinal findings in Study 1 are consistent with the cross-sectional findings in our previous report (Meyer et al., 2006). Those students demonstrating higher achievement outcomes in 2006 had, in the previous year, based their subject choices on interest, the importance of the subject and its utility for future career goals. They were also more motivated to do their best and get recognition. Those students demonstrating lower achievement outcomes in 2006 had, in the previous year, based their subject choices on external factors unrelated to usefulness or interest. They were motivated by doing just enough and work avoidance orientations. These findings suggest that students' attitudes to subject choice and motivation may have significant consequences for subsequent achievement.

Study 2: Exploratory Follow Forward of 2005 NCEA School Leavers

School and Student Participants

Our sample of Year 13 students from 2005 for whom we have student survey and achievement data from the 2005 Record of Learning had consented to being contacted regarding participation in longitudinal research. This pilot study was focused on graduate follow-up to investigate relationships among student self-reported motivation orientation patterns; student achievement in NCEA; student retrospective attitudes regarding how they believed NCEA had an impact on their learning and achievements; and actual student outcomes following secondary school. During the first year of this longitudinal research, we had intended to contact a sub-sample of our 20 secondary schools rather than attempting to locate all 739 of the Year 13 students in our 2005 sample. However, given the manageable size of this sample and the likely attrition that would occur by working through schools, we instead negotiated that NZQA provide us with mailing addresses from 2006 for all 739 who had consented to being contacted.

Surveys were mailed to home addresses in early December 2006, with a requested return date of 31 January 2007.

One hundred and fourteen school leavers responded to the survey, a response rate of approximately 15%. All but one were domestic students. Eighteen students for whom NSNs were either unavailable or incorrect had to be deleted from the sample as we could not match their survey responses to other data. This left a final sample of 96 individuals. Because our invitation to participate had been sent to home addresses late in 2006 nearly a year after the school leavers had finished secondary school and relied on parents to forward the information, we have no way of determining a true response rate based on received invitations. The final school leavers sample comprises 37 males and 59 females. Five participants had attended low decile schools, 54 middle decile schools, and 37 high decile schools. The majority (66%) classified their ethnicity as European, 26% as Asian, 3% Māori and 3% Pasifika; 2% classified their ethnicity as Other.

In future years of this research, we expect to expand this component as resources permit towards investigating specific hypotheses emerging from these preliminary findings.

Questionnaire Design and Data Collection

A two-page questionnaire sought information on what individuals were doing in 2006 and what they planned to do in 2007 (see Appendix for a copy of the survey). Listed options for both were taken from the alternative graduate destinations identified on the original survey. If they were attending tertiary education, they were asked if this was a degree or non-degree programme and when they expected to finish the qualification.

Data Analysis & Study 2 Survey Findings

The survey requested that students designate up to 3 things on the list that they "have been doing since completing secondary school." University study was indicated for 75% of the 96 school leavers, with the next most frequent reported items being full time work (16%), part time work (14%) and travel (12%). Interestingly, another 6% indicated they had gone overseas for a while followed by enrolling in tertiary study, 1% reported going overseas to work indefinitely, and 2% reported going overseas for tertiary study. Nine per cent indicated they had attended a non-university tertiary institution, and none reported attending a vocational programme. Other categories ticked by small numbers of students included "just hanging out while I decide what to do" (5%), "got married and/or started a family" (1%), professional sports (1%) and other (7%).

Of the 83 individuals who attended a tertiary programme, 69 said they were in a degree programme and 13 in a non-degree programme. One individual was undertaking an electrical apprenticeship. Degree programmes were wide-ranging, including biomedical science, commerce, early childhood education, and jazz music. Diploma and certificate programmes also varied widely, including holistic therapies, a barista course, Chinese language, and hairdressing. The majority of respondents (76%) indicated that they expected to finish their programmes in two years or more, while 8% expected to finish by the end of the year and 2% said they did not expect to finish their programme.

Students who were not enrolled in tertiary education reported activities such as travelling overseas, doing an apprenticeship, or working in New Zealand on a sheep and cattle farm, in a law firm, as a gardener, as a temp, as a land survey technician, or in a vineyard. Those working overseas named occupations such as working in a summer camp, temporary work; and unspecified volunteer work. One respondent reported that he/she "never think about this."

For the section on the survey regarding what school leavers expected to be doing the following year, 2007, the large majority expected to still be at university completing their qualification with the largest second option being to work full time. When asked for reasons for their first choice destination, those not currently in tertiary education but planning this subsequently typically commented that it was always part of their plan. Some said they "were sick of what they were doing" or had travelled and now wanted to start their degree. Participants who were in a tertiary programme generally indicated they wanted to continue studying to finish that programme. Table 6 below provides a summary of the 1st, 2nd and 3rd choice future destinations and the percentage of students overall who had not selected a particular option at all as one of their choices.

Table 6. Destination choices identified by school leavers.

	1st choice (%)	2nd choice (%)	3rd choice (%)	Not chosen (%)
University	87	1	0	12
Tertiary education	5	5	4	86
Vocational programme	0	0	0	100
Work full time	6	17	15	62
Work part time	0	14	7	79
Travel	0	8	14	78
Get married	0	0	0	100
Hang out	0	1	3	96
Overseas 1	0	3	3	94
Overseas 2	0	1	2	97
Overseas 3	2	8	4	86
Professional sports	0	1	1	98
Other	0	7	6	87

The fact that no one identified "vocational programme" as a possible destination suggests that this category may have instead been covered by responses in other categories such as tertiary education.

Seventy-two of these individuals reported having gone directly to university after leaving school, while 24 had not. Those who went to university earned more total credits, more achievement standard credits, and more achievement standards with merit and excellence. There was no difference between these groups for the number of achievement standards completed with the grade of Achieved. For the motivation orientations of *Doing my Best* and *Doing Just Enough* (shown to be most predictive of GA scores in our previous report based on 2005 data), *t*-tests were conducted to test whether individuals who did or did not go to university had earlier reported different motivation orientations. School leavers who went to university (M = 38.18, SD = 5.57) scored higher on *Doing my Best* than school leavers who did not go to university (M= 31.38, SD = 6.68; $t(94) = 4.93$, $p < .001$, Cohen's $d = 1.16$). In contrast, school leavers who went to university (M = 14.45, SD = 3.49) scored lower on *Doing Just Enough* than school leavers who did not go to university (M = 17.13., SD = 4.54; $t(94) = 3.01$, $p < .01$, Cohen's $d = .71$). Of course, these were the same motivation orientations that were significantly positively related to NCEA Level 3 achievement—itself predictive of who gains University Entrance and selection into programmes—so these correlations are consistent and cannot provide evidence of any causal relationship.

Data Analysis and Study 2 Interview Findings

On the survey, students had been asked to volunteer their contact information if willing to be interviewed individually in 2007. Attempts were made to contact all who had consented (total n = 42) during the time frame from late afternoon to early evening, and interviews were conducted with the first 12

individuals (28%) who could be reached within a designated time frame in May 2007. The telephone interviews ranged in length from 15-30 minutes, and focused on their responses to four questions regarding how well they believed the NCEA had prepared them for study or work; how hard they believed they had worked on NCEA while in school; whether they felt they had worked hard enough to prepare for what they were doing now; and, if they were at university, what they felt were the key factors involved in gaining University Entrance. Those interviewed had attended secondary schools at decile levels 1, 2, 5, 6, 7, 8 and 10. All 12 were enrolled in a tertiary programme in both 2006 and 2007, and the sample included 6 women and 6 men.

Responses from the 12 school leavers interviewed in May 2007 (approximately 18 months following secondary school) were analysed qualitatively to identify the set of themes emerging from responses to each of the four questions using common methodologies for grounded theory (Bogdan & Biklen, 1998; Charmaz, 2006; Strauss & Corbin, 1998). The themes emerging from the data are represented by terms highlighted in *italics* and reflect constructs evident in the theoretical literature as well as emerging from our own findings from survey results and focus groups.

Question 1: How well did NCEA prepare you for your study or work? What aspects were helpful/not helpful?

Ten of the 12 students made explicit comments regarding aspects of NCEA that in their view had prepared them adequately or well for university study. Students frequently made comments regarding *preparation* for both the internal assessments and end of the year examinations which are characteristic of both NCEA and university assessment. They also commented favourably that NCEA had helped their study habits including spreading their *workload* across the year and thus assisting with time-management. Typical comments included:

> I think NCEA prepared me well as I'm at university and have to sit internal assignments and exams and NCEA was similar….there was assessment throughout the year so you had to be prepared.
>
> NCEA prepared me for thinking beyond what used to be asked. I learnt how to conduct research, find information and validate it.
>
> Internals helped you work continuously throughout the year and thereby developing good study management and behaviour…developed good habits.

There was a mix of comments regarding the *utility* or relevance of subject preparation. There were more student comments indicating their secondary subject study prepared them well, and fewer comments indicating less relevance between secondary study and what students were now doing at University:

> What I found helpful was the clearly defined aspects of learning each part of the subject.
>
> NCEA concentrated on some topics within the subject not all topics.

> I did NCEA biology but it didn't really prepare me for university biology. They didn't assess us properly…. Assessment was not helpful as it breaks assessment down to different standards that are not relevant.
>
> NCEA prepared me well and the course material I studied was related to what I then went on to study at university, that is, level 3 Biology and now doing a BSc.
>
> The NCEA subjects I studied are not relevant to what I'm currently doing other than probably English.
>
> I did NCEA physics and PE and I found the Personal Trainer course [at university] easy as the things I learnt during school helped and were transferred to the PT course, for example, anatomy.

The opportunity for *subject choice* as a positive design feature of NCEA was explicitly mentioned by only two students:

> NCEA gave me a wider scope and more to focus on….Choices available were good.
>
> Choice of subjects was good. I had already decided what I wanted to do next and chose my subjects accordingly.

Where students made negative comments about NCEA, these fell into the two areas of subject study relevance to subsequent university study (already mentioned above) and aspects of the *grading* and marking system. Six of the 12 volunteered their objections to what they saw as insufficient differentiation of grade bands or *getting recognition* for higher achievement:

> There was no differentiation or recognition of whether you achieved credits with merit or excellence…There was nothing that could be presented to an employer.
>
> [NCEA] didn't acknowledge intellect with the three broad categories of achieved, merit and excellence. High and low merit wasn't assessed or at least we weren't advised whether we were low or high merit etc.
>
> The marking system was not helpful, i.e., A, M and E in NCEA and then going to Uni where you get percentages. Much prefer getting percentages as you know where you are—that is, from 1-100 rather than just 4 categories. You can judge better where you are.
>
> The marking system of NCEA was not helpful with just three categories (achieved, merit, excellence). They don't tell you by how much you failed to achieve merit or excellence. There needs to be more categories and to be much more clearer what is expected.

Question 2: How hard did you work on your NCEA subjects? Why?
Question 3: Looking back, do you think you worked hard enough on NCEA to prepare yourself for what you are now doing? Why or why not?

The responses to these two questions covered similar issues, so will be discussed together. Students reported all variations of whether they found NCEA Levels 1, 2 or 3 harder or easier than other levels—there was no pattern to these responses, with some students finding Level 1 hardest, some finding Level 3 hardest, and others finding every possible combination of 2 of the 3 levels easier than the other level. On the other hand, there appears to be a trend whereby these university-bound students report doing what they had to do for University Entrance so that if the achievement of that goal was seen as easy, they reported that NCEA was not hard:

> [I] worked hard enough to get into the engineering course at university.
>
> I think I did work hard enough, I passed and gained UE into the course I wanted.
>
> For UE, I didn't have to work that hard as previously as I had in Levels 1 and 2.
>
> I worked as hard as possible to get decent marks so that I could go to Uni.
>
> I didn't work really hard as only needed 42 credits at level 3 to get into university to do an Arts degree. If I wanted Medicine, I would have had to work much harder. Over a year we had to do 5 subjects = 120 credits, only needed 80 to pass Level 1 and Level 2 and for University Entrance only needed 42 credits at level 3.
>
> I knew that I had to work reasonably hard so that I could go to university. I was motivated to go to university.
>
> For NCEA physics all I needed was 2E, 3M and a handful of achieved results and I could select topics to maximise my marks (could choose the topics I liked best and could do better at), whereas at university you have to know it all, you select by topic.

One student said he had not worked hard at levels 1-2 but then commented on what happened when he did work harder at level 3:

> In Level 3 I worked hard as I had decided I wanted to go to university and started doing extra work. However this extra effort didn't really improve my grades. There was a lot of work at level 3, so I worked really hard; it got me a few more excellence results, but I expected to get more from that extra effort and didn't.

Seven of the 12 students noted that they worked just hard enough—*Do Just Enough*—to gain university entrance which was their goal. Four students commented that they worked hard because of their *Interest* in the subject or because they strove to *Do My Best*:

> I worked pretty hard because I liked the subjects I was studying and I like to do the best I can.

> I worked to broaden subject variety and wasn't limited by the marks.
>
> [I] worked hard for history as I enjoyed it.
>
> Biology I worked harder on as it was my main interest.

Question 4: What do you think were the key factors involved in your gaining university entrance?

Ten of the 12 students mentioned positive extrinsic and intrinsic motivational factors including being motivated to achieve and working for personal goals (8 students), choosing the subjects needed (2 students), support from parents and family (2 students), and the positive impact of developing study routines to prepare for university (3 students). Comments such as those below illustrate examples of both *mastery* and *performance goal orientations*:

> Parents encourage me to achieve good results, and I like showing them good results. Motivated if parents were proud, but they always pushed me but at the time I didn't like it that much.
>
> Working hard because I like to achieve and do well and I achieved UE. I received a lot of support from my family which helped me to develop good habits.
>
> Personal preference and a sense of accomplishment motivated me….I was motivated to achieve.
>
> NCEA helped me as going to school did generally, for example, developing a study routine.

Two students did not mention any positive factors but instead suggested that gaining University Entrance was easy and based on minimal criteria. One of these students commented that students who had done the bare minimum under NCEA had not been prepared well for university:

> My experience of people who achieved and aimed for just the [minimum] who then went on to university is that they haven't survived….They tried at school just to achieve their credits and expected university would require a similar amount of effort and many have consequently dropped out.

Summary of Study 2 Findings

The sample in Study 2 is small and not representative, but it does show that students with positive motivations as Year 13 students in 2005 are mostly at University and advancing their education in 2006 and 2007. These students also stress that the internal assessment aspects of NCEA prepared them well for university assessment practices.

Study 3: Further Analyses of Motivation Orientations and Achievement

Our longer survey had identified dimensions of self-reported motivation orientations that were related significantly to actual student achievement. Study 3 was designed to investigate further the relationship of the two factors most strongly related to achievement and the feasibility of validating a screening instrument that could identify student motivation orientations in advance of achievement results. If such a tool could be developed, this could provide opportunities for research to investigate effective interventions to shift student motivations and their achievement. Study 3 also included measures of student attributions for high grades (relative success) and low grades (relative failure) on an actual test or exam. In order to have the target of attribution constant for students, the test or exam was specified as an English exam, because the majority of students at years 10-11 take English as a subject or have done so very recently. Hence, these items would allow us to examine whether students' pattern of attributions related to their motivation and their actual achievement.

School and Student Participants

Student surveys completed by students in Years 11-13 in 2005 revealed strong relationships between particular motivation orientations and actual NCEA achievement (see Meyer et al., 2006). However, "snapshot" data such as these at one point in time cannot reveal whether self-reported motivation orientations predict future achievement, whether they change over time as a function of school experiences, and/or whether motivation and achievement can be altered positively by teacher and school interventions. Addressing such issues requires longitudinal data.

Two sub-studies were undertaken. The first involved a new sample of Year 10-11 students who completed a short "screening" measure in 2006 to identify motivation orientations that might be predictive of future achievement (see Appendix D for a copy of this measure). The second study extended analyses of the 2005 Year 10 students updated to include their Year 11 NCEA Level 1 achievement results, taking the sub-set of items from the 2005 Student Survey that was positively related to achievement for senior secondary students. This analysis investigated whether there is a predictive relationship between ratings on this item sub-set and subsequent school achievement in 2006 for students in Year 11 who took the Year 10 survey in 2005.

Motivation Measures

The 2005 Year 10 and Year 11-13 Student Surveys were developed as part of our earlier research, and complete information regarding their design, content, and scoring is available in Meyer et al. (2006). See also Appendices B and C for copies of these surveys (Appendix F also reproduces the factor analysis results for this earlier survey as the dimensions emerging from the earlier research project were used to inform the design of the 2006 screening instrument and aspects of the 2006-2007 research project).

The *Survey of NCEA Goals for Year 10 & Year 11 Students* (2006) was designed to be a high utility, screening tool incorporating fewer items but reflecting those dimensions that had shown the strongest relationships with actual achievement. The screening instrument also added two items designed to assess another possible related dimension that had not been included in our earlier survey—attributions of success and failure. The screening instrument includes 3 sections. Section 1 comprises descriptive information such as gender; student status; year in school; whether or not the student held a part-time job and if so the number of hours worked weekly; and which level/s of NCEA the student expected to complete. Section 2 assesses motivation orientation for the four items that had loaded highly on the *Doing My Best* and four that had loaded highly on the *Doing Just Enough* factors from the 2005 longer survey: These factors had been highly correlated with actual student achievement on the longer survey with Year 11-13 students. Items were presented in random order. A ninth item asked whether students preferred unit standards rather than achievement standards. The student indicates whether each statement is "not me", "sometimes me", "mostly me" or "definitely me" by circling a number from 1 to 4 respectively on a Likert type scale. Section 3 assesses success and failure attributions by asking students to circle a number from 1 for "no influence" to 4 for "big influence" regarding the impact of four influences on one of their best marks and lowest mark in English; the four influences listed were my ability, my effort, test or exam was easy/hard, and good/bad luck. We chose English as a specific subject area as all students would have been enrolled in this subject area recently and focussing on one subject across all students would also reduce variability that might otherwise occur if students did their ratings based on what they saw as their personal best and worst subjects.

Data Collection

For the study, 18 of the 20 schools of our original sample who were asked to administer the shorter screening tool to Year 10 and Year 11 students did so; the 18 participating schools remain representative of New Zealand secondary schools. The Year 11 group thus included some students who had participated the previous year 2005 while in year 10, but also included additional students who agreed to participate.

This shorter survey was designed so that students could complete it during a form period in less than 10 minutes. This limited time requirement as well as the longer timeline available to schools than was the case in 2005 was expected to enhance the participation rate in the study but is also designed to be consistent with a functional screening instrument for future use. Completing the screening tool was voluntary with students signing consent if they agreed to participate.

For this study, we did not have data from the additional attribution measure items but were able to access NCEA level 1 records of learning for all students from Year 10 in our 2005 sample. These students had also completed the longer survey in 2005. Thus, for the Year 11 students, we could investigate whether the sub-set of motivation orientation items did

predict achievement a year later. Similarly, for the Year 10 students, we will be able to investigate the extent to which the screening tool comprising the sub-set of items can predict achievement in Year 11 at the end of 2007.

Data Analysis for the Two Student Groups

To investigate the relationship between factor scores on the motivation orientation measure completed by Year 10 students in 2005 and their achievement in Year 11 during 2006, we required their NSNs and achievement data from NZQA. Originally, we had projected no need to contact schools for the 2005 Year 10 students in this study, as the data would be sourced directly from NZQA. However, students who had been in Year 10 in 2005 who were Year 11 in 2006 were not assigned National Student Numbers by NZQA until May 2007. Given the extent of the task involved in matching NSNs to student names for thousands of students, it was necessary for us to re-approach many of the schools in our sample and ask that they provide the matches for us. We offered additional clerical assistance for this to schools, though only 2 schools accepted this help. For some of our student sample, neither NZQA nor the particular school was able to assign someone to this task in time for the data to be included in this report. When this information is received, it will be incorporated into the data-set for subsequent research reports based on this project.

The new sample of 2006 Year 10 students in this study will not be given NSNs nor will they be recording NCEA achievement data until 2008. Thus, the longitudinal analysis with this student sample cannot be done until the next phase of the longitudinal research. Frequency statistics, factor analyses, and multiple regression analyses will be carried out to investigate interrelationships across variables.

Study 3 Findings for Year 10-11 Students from 2006

This section reports information on the data set and the findings for all the Year 10 and Year 11 students who completed the screening instrument in 2006 and the students for whom NCEA achievement information was available for 2006 (Information on Year 11 students, provided by NZQA early in 2007).

Participants included 4,202 students in Years 10-11 at the 18 schools that were part of this study in 2006, who completed the screening survey. All students who completed less than 95% of the items on the survey were deleted from the sample leaving 4,075 students in this final dataset. For the missing data still evident in the remaining student surveys that was randomly scattered across items, the mean value for that individual item was substituted as an acceptable strategy to deal with random missing data. The amount of missing data for each item ranged between 0 and 66 data points. Given that this represented a maximum of 1% of the data, it is most unlikely that replacing missing data with the mean for an item would significantly influence results.

This sample of 4,075 included 2,064 males and 2,001 females (10 participants did not state their gender). There were 1,908 Year 10's and 2,138 year 11's

(29 did not report their year in school). Year 10 included 909 females and 997 males, whereas year 11 included 1,082 females and 1,055 males. The sample included 3,812 domestic students and 107 international students (156 did not report status).

Accurate NSNs were provided from three sources; the participants themselves, NZQA, and the schools involved in the project. In total we were provided with NSNs for 3,970 students, allowing achievement data to be accessed and entered for these individuals. However, the results related to achievement data for Study 3 reported below are based on 2,853 students rather than the total 3,970. Some students, could not be included in analyses because we were not provided with their NSNs and achievement data in sufficient time. (Note again that NSNs were not allocated to Year 11 students until May 2007).

Of the 2,853 students included in the achievement data analyses reported in the next sections, there were 1,443 males and 1,408 females (2 participants did not provide information about gender). From the 2005 data collection, this included 1,600 year 10 students from 2005 (810 males, 790 females), and 65 students (all male) from year 11. From the 2006 data collection, there were 1,001 year 11 students (475 males, 526 females), and 173 year 10 students (83 male, 90 female). Twelve individuals (10 male, 2 female) did not report their year at school.

Most students (81%) were domestic students, 2% were international students, and 17% did not report their student status. European New Zealanders/Pakeha were the largest percentage at 63%, 14% were Māori, 14% were Asian, 7% were Pasifika, and 2% classified their ethnicity as “Other”. The majority of students (60%) were from middle decile schools, 10% were from low decile schools, and the remaining 30% were from high decile schools.

The Impact of Part-Time Work

In our 2006 report based on information collected from students in 2005, we reported that a sizeable percentage of senior secondary students were engaged in part-time work. We had not, however, asked students how many hours weekly they worked, so were unable to evaluate meaningfully the impact of part-time work on their academic achievement in school. In the 2006 surveys completed by students, we asked them to identify a range of hours worked in order to analyse these data for possible impact on achievement.

Although the achievement data only incorporates 2,853 participants, we had descriptive information about part-time work from 3,473 participants. Of the total sample of students in Years 10-11 who completed our survey in 2006, 1,283 students reported they had a part-time job, and 2,190 said they did not; ten students did not provide this information. Of the 1,263 students who responded to the item asking how many hours they worked weekly, 439 reported working up to 5 hours weekly, 458 reported working between 6-10 hours, 240 reported working between 11-15 hours, and 126 said they worked more than 15 hours weekly.

Year 10 Students. Of the 1,575 students in Year 10, 503 (32%) had a part-time job, and 1,067 (68%) did not have a part-time job. Five students did not indicate if they had a part-time job or not. Of the 503 students who reported having a part-time job, one student did not indicate how many hours worked weekly. 228 students (45%) worked up to 5 hours weekly, 180 (36%) worked between 6-10 hours a week, 66 (13%) worked between 11-15 hours, and 28 (6%) worked more than 15 hours. One individual did not specify how many hours he/she worked weekly.

Among year 10 students, males and females worked similar hours weekly in their part-time jobs. The chi-square test for this cross-tabulation was not significant, $\chi^2(4) = 4.91$, $p = .30$.

Table 7. Percentages of Year 10 students by gender reporting part-time work.

	No Job	Up to 5 hrs	6-10 hrs	11-15 hrs	>15 hrs
Male	55%	63%	59%	56%	61%
Female	45%	37%	41%	44%	39%

Year 11 Students. Of the 1,901 students in Year 11, 778 (41%) had a part-time job, and 1,120 did not have a part-time job. Three students did not indicate if they had a part-time job or not. Of the 778 students who had a part-time job, 19 students did not indicate how many hours they worked on average per week. Of those who indicated how long they worked, 210 (28%) reported working 5 or fewer hours, 278 (36%) reported working between 6 and 10 hours, 174 (23%) reported working between 11 and 15 hours, and 97 (13%) said they worked more than 15 hours each week.

For Year 11 students, males and females reported working similar hours weekly except for the category of over 15 hours, with males reporting that they worked this many hours more frequently than females. The chi-square test for this cross-tabulation was significant, $\chi^2(4) = 16.62$, $p < .01$.

Table 8. Percentages of Year 11 students by gender reporting part-time work.

	No Job	Up to 5 hrs	6-10 hrs	11-15 hrs	>15 hrs
Male	52%	45%	43%	45%	63%
Female	48%	55%	57%	55%	37%

There were also reported differences in time spent working part-time by students from different ethnic groups. New Zealand European students overall were most likely to have a part-time job, and more than 70% of Asian, Māori, and Pasifika students reported that they did not work part-time. The chi-square test for this cross-tab analysis was significant, $\chi2(16) = 81.65$, $p < .001$.

Table 9. Percentages of Year 11 students by ethnicity reporting part-time work.

	No Job	Up to 5 hrs	6-10 hrs	11-15 hrs	>15 hrs
European	53%	13%	17%	12%	5%
Asian	76%	7%	10%	4%	3%
Māori	64%	8%	14%	6%	8%
Pasifika	78%	3%	8%	7%	4%
Other	70%	12%	15%	3%	0%

Is the time spent on a part-time work related to achievement?

Because 2006 NCEA achievement data are available for Year 11 only, the relationship between different levels of part-time work and academic achievement in school was investigated for these students but could not be investigated for students in Year 10. Table 10 reports different achievement outcomes for the different levels of part-time work reported by students in Year 11. The numbers represent the mean value for each achievement outcome, with standard deviations in parentheses.

Table 10. The relationship of different weekly levels of part-time work and achievement as measured by NCEA Level 1 for Year 11 students.

	Credits-Total	Ach-Total	Unit-Total	Credits-Not Achieved
No Job	101.14 (44.64)	74.03 (42.98)	27.11 (20.69)	15.10 (15.73)
Up to 5 hrs	106.07 (44.24)	83.25 (42.20)	22.81 (19.00)	13.22 (14.59)
6-10 hrs	109.36 (39.18)	81.45 (42.55)	27.91 (22.40)	14.02 (13.81)
11-15 hrs	111.59 (37.18)	80.67 (41.08)	30.92 (22.16)	18.06 (15.69)
> 15 hrs	97.80 (35.33)	63.53 (40.02)	34.27 (23.16)	20.24 (13.69)

	Ach-Achieved	Ach-Merit	Ach-Excellence	Not Attempted
No Job	41.15 (25.50)	22.14 (19.74)	10.74 (17.03)	.94 (1.58)
Up to 5 hrs	44.76 (25.03)	26.29 (20.10)	12.21 (17.45)	.62 (1.29)
6-10 hrs	44.56 (24.61)	24.32 (19.29)	12.57 (18.54)	1.17 (1.70)
11-15 hrs	47.55 (22.86)	24.28 (19.89)	8.84 (12.78)	1.18 (1.74)
> 15 hrs	40.67 (23.60)	16.88 (16.48)	5.97 (9.26)	1.44 (1.96)

Ach = Achievement Standard Credits Unit = Unit Standard Credits

To test for the significance of differences, a multivariate analysis of variance on achievement results was undertaken. Table 11 shows that the effects are very small, though visual inspection of these data does support previous research findings of a curvilinear relationship between these factors. As hours worked was significantly related to all achievement outcomes, we probed for differences with post hoc tests, using Bonferroni corrections (the descriptive statistics on which these tests were performed are from the two preceding tables above).

For the achievement outcome of the total number of credits attained, students with no part-time job earned less credits overall than those students who worked 6-10 hours and 11-15 hours. There were no other differences for total

number of credits gained. For the outcome of total number of only achievement standard credits attained, students with no job gained less achievement credits than students who reported working between 1-5 hours. In addition, students who worked more than 15 hours weekly earned fewer total achievement standard credits than all other students who worked, and students who worked part-time (up to five hours weekly) attained the highest number of achievement standard credits than any other group. There were no differences in total credits achieved, between students who did not work and students who worked more than 15 hours per week, with these two groups attaining fewest credits overall.

We were also interested in the relationship between part-time work and attainment of Unit Standard credits. Students who worked more than 15 hours per week earned more unit standard credits than those without a job or those who worked up to 5 hours. Students working 5 or fewer hours a week earned fewer unit standards than students working between 11 and 15 hours and those working more than 5 hours.

Students who worked more than 15 hours weekly received more grades of Not Achieved on achievement standards attempted in comparison with both students without jobs and those working part-time up to 10 hours weekly. Students working between 11 and 15 hours also received more grades of Not Achieved on achievement standards attempted in comparison to students working 5 or fewer hours. There was no difference between students who worked 11-15 hours and those who worked more than 15 hours in the number of achievement standards that were not passed.

For achievement standards gained with the grade of Achieved, the only difference was that students without a job gained fewer credits than students who worked between 11 and 15 hours. For achievement standards gained with Merit, students who worked over 15 hours weekly earned fewer credits with Merit than all other students working part-time. There was no difference between students who worked more than 15 hours and students without any part-time work for credits attained with Merit. On the other hand, students without part-time work achieved slightly fewer credits with Merit in comparison to students who worked up to 5 hours weekly. For credits gained with Excellence, the only statistically significant difference was that students who worked more than 15 hours weekly earned less credits with Excellence than students who worked between 1 to 10 hours weekly.

Standards Not Attempted was the final achievement outcome we examined in relationship to part-time work. Students who worked more than 15 hours weekly recorded more standards Not Attempted than students without a job and those students working up to 5 hours weekly. In fact, students who worked up to 5 hours per week showed fewer recorded standards Not Attempted than all other students with part-time jobs.

Table 11. Tests for significant differences on achievement outcomes between groups for the variable of part-time work.

	df	*F*	*p*	Partial η^2
Credits-Total	4,1889	4.29	<.02	.01
Ach-Total	4,1889	5.89	<.001	.01
Unit-Total	4,1889	6.44	<.001	.01
Credits-Not Ach	4,1889	5.45	<.001	.01
Ach-Ach	4,1889	3.59	<.01	.01
Ach-Merit	4,1889	4.90	<.001	.01
Ach-Excellence	4,1889	3.75	<.01	.01
Not Attempted	4,1889	6.49	<.001	.01

A second multivariate analysis of variance was conducted to check for significant interactions between hours of part-time work by gender on these outcome variables. The multivariate hours worked by gender interaction was not significant, $F(28) = .73$, $p = .85$, partial $\eta^2 < .01$. Even though there was no significant multivariate interaction, we also checked the univariate hours worked by gender interactions for each achievement outcome. None were significant.

Some cell sizes were too small to allow examination for interaction of hours worked by ethnicity.

The data indicate that the most positive achievement outcomes are being attained by those Year 11 students who report that they are working 10 or fewer hours weekly. Those reporting that they work more than 15 hours per week are doing least well academically, with the one exception that they are attaining the greatest number of unit standards (though they also had the highest number of standards Not Achieved overall). It is likely that students reporting no part-time work are a heterogeneous group of young people including those who are high achievers focussed solely on academic work, those generally less industrious, those carrying heavy extracurricular loads such as involvement in sport, and those with substantial commitments at home, such as taking care of younger siblings or children in the family. Some of these commitments could be just as challenging to having time available for study and even attendance at school as part-time work, and further research would be needed to capture adequately the other kinds of time demands that students might experience.

Our findings are consistent with international literature, particularly the concept of a “threshold model” whereby working up to a threshold number of hours has increasingly positive effects on achievement, but increasingly negative beyond that threshold number (Marsh & Kleitman, 2002). The literature has argued that the relationship between part-time work and achievement reflects the influences of personal characteristics such as industriousness and ambition combined with the necessity to organise and build good study habits in order to balance concurrent demands of work and study (Greenberger & Steinberg, 1986; Hammes & Haller, 1983; Marsh & Kleitman, 2005).

Relationship between Year 10 Motivation Orientations and Year 11 Achievement and Motivation, 2005 - 2006

In this section, we discuss findings based on data analyses for the 2006 Year 11 students whose participation in our research spans two years. These students had completed the longer NCEA Survey of Year 10 Students, (see Appendix B for a copy of this survey and Appendix F for the factor structures that emerged from these data). This longer survey included both the sub-set of items that comprise the 2006 screening tool as a measure of *Motivations Towards Learning* but also includes the two other subscales for *What I like or dislike about aspects of NCEA and assessment* and *Influences on subject choice*. In addition, for a subset of these participants, our data for the 2006 Year 11 students included their survey results for the screening tool and their achievement results for NCEA Level 1 from 2006.

Relationship between Influences on Subject Choices and achievement outcomes. The 2006 NCEA Level 1 achievement data allow us to analyse student achievement in relationship to self-ratings from a year earlier, of the influences on subject choice. Overall, the relationships across influences on subject choices in 2005 and achievement outcomes in 2006 were weak. The largest effects, although still relatively weak, suggest that selecting subjects based on *Interest* and *External* reasons were related to gaining more and less credits with Merit, respectively.

Table 12. Relationships across influences on subject choice in 2005 and Year 11 achievement in 2006.

	Total Credits	Unit Standards	Standards Not Attempted
Utility	.09***	-.03*	-.04*
External	-.17***	.07**	.08***
Interest	.23***	-.08**	-.03

	Grade of Achieved	Grade of Merit	Grade of Excellence
Utility	.05*	.10***	.08***
External	-.04*	-.21***	-.17***
Interest	.11***	.24***	.19***

* = $p<.05$, ** = $p<.01$, *** = $p<.001$

Relationships between Motivations towards Learning and Achievement Outcomes. Regarding 2005 student survey data for the section on *Motivation Towards Learning* (what students think about their learning), the two motivation orientations of *Doing My Best* and *Doing Just Enough* a year earlier were the dimensions most strongly related to student achievement in 2006. Dimensions of *What students like and dislike about assessment* were generally not related to achievement outcomes the following year, with one exception. Work Avoidance was negatively related to achievement for the number of achievement standard credits attained with Merit and with Excellence.

Table 13. Relationships across motivations towards learning in 2005 and Year 11 achievement in 2006.

	Total Credits	Unit Standards	Standards Not Attempted
Doing My Best	.27***	-.14***	-.11***
Doing Just Enough	-.37***	.21***	.11***
Work Avoidance	-.19***	.07*	.06**
Getting Feedback	.09***	-.06**	.11***
Getting Recognition	-.12***	.05	.06**

	Grade of Achieved	Grade of Merit	Grade of Excellence
Doing My Best	.05*	.35***	.34***
Doing Enough	-.11***	-.47***	-.41***
Work Avoidance	.01	-.23***	-.28***
Getting Feedback	.03	.13***	.11***
Getting Recognition	.05	-.12***	-.11***

* = $p<.05$, ** = $p<.01$, *** = $p<.001$

Consistency of Achievement Orientations across a two-year period. Our 2005 analyses had revealed that student self-report on two factors emerging for the *Motivations towards Learning* were those most strongly related to achievement outcomes for a "snapshot" at one point in time. Students completed the longer survey for self-reported motivation orientations at the same time as they were accumulating their achievement records for the 2005 year. While this correlation does not demonstrate a causal relationship between this particular motivation orientation and achievement, we did have a strong predictor of achievement so that the design of an efficient screening instrument based on fewer items could potentially generate important information that teachers and schools could use to teach more effectively. Thus, we needed to know more about the fluctuation of the self-reported Motivation Towards Learning orientations *Doing My Best* and *Doing Just Enough* over time, as well as their relationship to achievement from one year to the next.

To examine fluctuations of these two important motivation orientations across time, we correlated results for this section of the 2005 survey with those for the parallel section of the 2006 survey for the 748 Year 11 students who completed both surveys. Overall, student orientations as measured by the two sets of survey items were consistent across the two years. If students had reported an orientation to *Doing My Best* in 2005, they were likely to still report this orientation in 2006. The same was true for the orientation *Doing Just Enough*.

Table 14. Motivations towards learning across two years.

	Doing My Best 05	Doing Just Enough 05	Doing My Best 06
Doing just enough 05	-.27***		
Doing my best 06	.59***	-.34***	
Doing just enough 06	-.36***	.53***	-.39***

*** = p<.001

These data suggest that both positive and negative motivation orientations in Year 10 are highly likely to persist the following year and would be expected to show predictable relationships with achievement outcomes. Thus, a brief early self-report measure could provide powerful information to investigate the effectiveness of different approaches towards changing motivation orientations and consequently, actual achievement.

Relationship between 2006 Motivation Orientation Data from the Screening Instrument and 2006 NCEA Achievement: Results for 2006 Year 11 Students. To investigate whether our 2006 screening tool would show relationships to achievement similar to those revealed to be strongest in the 2005 data, we also correlated Year 11 student results on the screening tool with NCEA achievement outcomes in 2006; all this data being from the same year (see Table 15).

As with the 2005 results, the *Doing My Best* orientation was associated with gaining more credits overall, more credits at Merit and Excellence, and fewer unit standard credits. *Doing Just Enough* was associated with gaining fewer credits overall, fewer credits at Merit and Excellence, and more unit standard credits.

Table 15. Relationship between 2006 motivation orientations (on the screening tool) and 2006 NCEA achievement.

	Doing My Best	Doing Just Enough
Total Credits	.21***	-.40***
Total Unit Standards	-.27***	.20***
Credits Achieved	-.09***	-.13***
Credits Merit	.42***	-.53***
Credits Excellence	.47***	-.45***
Not Attempted	-.26***	.18***

*** p < .001

Overall scores on the screening instrument were related to achievement in the expected directions, thus supporting further analyses.

Examination of the Psychometric Characteristics of the Motivational Orientation Screening Instrument

Before the Motivational Orientation screening measure was used in further analyses, some preliminary analyses were undertaken to confirm its two-factor structure and to provide estimates of the reliability of the two derived scales.

To support the use of the two motivational orientation scales identified in previous research, a Confirmatory Factor Analysis (CFA) was undertaken. This used the responses of a random sample of 300 participants (drawn from all those who had completed the questionnaire) to the eight items presumed to assess these two factors in the screening instrument. In this analysis, goodness of fit to the theoretical model was assessed using chi-square analysis together with five indices of goodness of fit.

Chi-square analysis is used to support the theoretical structure by showing that it does not differ significantly from the observed data. As it has been found almost impossible to obtain a non-significant chi-square value, a rule of thumb that a value of 2.00 or less, obtained by dividing the chi-square value by the degrees of freedom has become generally acceptable as an indicator of an adequate fit. The present data showed that with 19 degrees of freedom, the chi-square of 36.80 was significant beyond the .01 level, but that the chi-square divided by the degrees of freedom gave an acceptable value of 1.94.

Other indices of goodness of fit used fell into two groups. The first of these groups included the Goodness of Fit Index, (GFI) the Adjusted Goodness of Fit Index, (AGFI) and the Normed Fit Index (NFI) (see Tabachnick and Fidell (2001) pages 697-702). These are true goodness of fit indices with ideal values at or approaching 1.00 (perfect fit), and the values found for the Screening Measure (0.97, 0.95 and 0.95 respectively) support the two factor structure.

The second group of goodness of fit indices is based on residuals, and the ideal values are therefore small values that approach zero. The indices used here were the Root Mean Square Residual (RMR) and the Root Mean Square Error of Approximation (RMSEA) (see Tabachnick and Fidell (2001) pages 697-702). For the two-factor structure of the screening measure the values found for these indices were 0.04 and 0.06 respectively, again indicating an acceptable level of fit.

The results of the foregoing analyses support the use of the screening measure as two scales measuring *Doing My Best*, and *Doing Just Enough*. Reliability estimates for *Doing My Best* were Cronbach's Alpha = .79, Split Half (Adjusted for Attenuation) =.79, and for *Doing Just Enough* were .69 and .72 respectively.

Motivation Orientations by Gender, Ethnicity, and School Decile for Year 10-11 students

Differences in student responses were examined for selected key demographic variables often considered to be relevant in research on student motivation and achievement. These were gender, ethnicity and school decile level, used as a rough measure of socio-economic status. These analyses were based on the screening instrument Motivation Towards Learning factors only, across both Years 10 and 11.

Relationships between gender and the orientations Doing My Best and Doing Just Enough. Females (M = 11.05, SD = 2.76) scored higher on the *Doing My Best* orientation in comparison to males (M = 11.05, SD = 2.76), but the size of the effect was small, $F(1,3479) = 31.94$, $p < .001$, partial $\eta^2 = .01$. Males (M = 8.66, SD = 2.77) reported higher endorsement of *Doing Just Enough* than females (M = 7.87, SD = 2.66), though again the effect was small, $F(1,3479) = 73.50$, $p < .001$, partial $\eta^2 = .02$.

Relationships between ethnicity and the orientations Doing My Best and Doing Just Enough. This analysis was conducted for four ethnic groupings with sufficient cell sizes, NZ European, Asian, Māori, & Pasifika. There was a significant main effect for ethnicity on the *Doing My Best* factor, $F(3,1885) = 30.29$, $p < .001$, partial $\eta^2 = .05$. Asian students (M = 12.27, SD = 2.63) scored higher on this orientation than European (M = 10.85, SD = 2.82), Māori (M = 10.21, SD = 2.64) and Pasifika students (M = 10.58, SD = 2.57). Pasifika and European students did not report the *Doing My Best* orientation differently. Likewise, Pasifika and Māori students did not score significantly differently to one another on *Doing My Best.* On the *Doing Just Enough* orientation, there was a significant effect for ethnicity, $F(3,1885) = 21.53$, $p < .001$, partial $\eta^2 = .03$. European (M = 7.73, SD = 2.77) and Asian students (M = 7.30, SD = 2.54) scored lower on this orientation than Māori (M = 8.84, SD = 2.90) and Pasifika students (M = 8.93, SD = 2.48). However, European and Asian students did not score differently on this orientation.

Relationships between school decile level and the orientations Doing My Best and Doing Just Enough. Students from low decile schools (M = 10.14, SD = 2.87) scored lower on the *Doing My Best* orientation than students from middle (M = 10.96, SD = 2.75) and high decile schools (M = 11.24, SD = 2.88). There was no difference in how students scored on the *Doing My Best orientation* between students at middle and high decile schools, $F(2,1886) = 10.18$, $p < .001$, partial $\eta^2 = .01$. Students from high decile schools (M = 7.47, SD = 2.66) scored lower on the *Doing Just Enough* orientation than both students from middle (M = 7.94, SD = 2.76) and low decile schools (M = 8.93, SD = 2.98). The size of the effect was, however, quite small, $F(2,1886) = 19.45$, $p < .001$, partial $\eta^2 = .02$

Predictive Validity of the Screening Tool

A full test of the predictive validity of our short *Motivations Towards Learning* screening instrument will not be feasible until the Year 10 students who completed the measure in 2006 have moved on to Year 11 in 2007 and

completed NCEA Level 1 assessments. Only early in 2008, when achievement data for our sample become available from NZQA, will we be able to test the predictive validity of the instrument. In the meantime, however, we can make a reasonable estimate of its predictive validity. This can be done by testing relationships between the full factor subscale scores from the *Motivations Towards Learning* section of the longer survey (administered in 2005) and the factor subscale scores from the *Motivations Towards Learning* section of the screening tool (administered in 2006). Further, these can also be examined for relationships to 2006 achievement, by examining results for the group of Year 11 students in 2006 who completed the screening measure, provided achievement data, and had also participated in 2005 so that the longer survey data from that year was available. Finally, we are able to compare relationships of the 2006 screening instrument dimensions to achievement, with the relationships of the 2005 survey dimensions to achievement.

Interrelationships of Motivation Item Subsets Across Time

To test the predictive validity of the screening instrument, we examined the relationships among the 2005 scores on screening items, and the screening instrument 2006. Sample sizes were as follows: 1,738 students for the 2005 data; 3,483 students for the 2006 data; and 748 students across both the 2005-2006 school years. The first check was to determine how consistent responses were across time and investigate whether the 2005 sub-sets of screening items were strongly related to the 2006 screening measure items. Overall, these orientations were found to be consistent. If a student reported the *Doing My Best* orientation in 2005, he/she was likely to continue have a high score on this dimension in 2006. The same was true for the orientation of *Doing Just Enough*. The subset of items from 2005 had been selected for the screening instrument because they were those loading highest on these factors in the 2005 data analyses. These same screening items were related to the motivation orientation scores in 2006, and were related to a similar degree to the overall scores associated with 2006 orientations. Table 16 shows the interrelationships of the subsets of items comprising these dimensions.

Table 16. Interrelationships across total factor scores (*Best* 05 or *Just* 05), survey item subset factor scores (*S-Best* 05 and *S-Just* 05) and screening instrument factors (*S-Best* 06 and *S-Just* 06).

	Doing My Best 05	Doing Just Enough 05	S-Doing My Best 05	S-Doing Just Enough 05	S-Doing My Best 06
Just 05	-.24***				
S-Best 05	.90***	-.53***			
S-Enough 05	-.24***	.88***	-.25***		
S-Best 06	.59***	-.34***	.57***	-.35***	
S-Enough 06	-.36***	.53***	-.35***	.51***	-.39***

*** = $p < .001$ S = screening instrument items

Clearly, with correlations of .90 and .88 between these items in 2005 and 2006, the identified items chosen for each of the factors *Doing My Best* and *Doing Just Enough* demonstrated maximum efficiency in assessing these dimensions using fewer items on the screening measure rather than all the items loading on the original factors. It is also relevant to note the highly significant relationships across time between student scores in 2005 and 2006 on these same dimensions based on the four items in each factor (.59 and .53 for *Doing My Best* and *Doing Just Enough*, respectively). It would appear that student Motivations Towards Learning for our sample, are relatively stable from year 10 to year 11 in secondary school. We don't know whether or how these motivation orientations might be amenable to change based on interventions to do so.

Predicting 2006 Achievement based on the Screening Tool Item Subset

Compared with the relationships among 2006 motivation orientations and achievement outcomes, the relationships among motivation orientations reported in 2005 (focussing on the items identified for the screening tool) and achievement outcomes in 2006 showed that these screening tool items performed quite well. The same pattern of results was identified, but the correlations were slightly weaker.

Table 17. Relationships for 2005 survey item subset and achievement in 2006.

	S-Doing My Best 05	S-Doing Just Enough 05
Total Credits	.23***	-.33***
Total Unit Standards	-.15***	.20***
Total Achievement Standards	.29***	.40***
Credits Achieved	.03	-.08***
Credits Merit	.33***	-.44***
Credits Excellence	.33***	-.41***
Not Attempted	-.12***	.10***

*** = p<.001 S = screening measure items

To assess the predictive ability of the screening tool items, a series of regression analyses with the two predictors *Doing My Best* and *Doing Just Enough* on the different achievement outcomes were performed. Both *Doing My Best (*β = .16, p <.001) and *Doing Just Enough* (β = -.29, p <.001) predicted the number of total credits gained. Combined the screening items predicted 13% of the variance in later credits attained.

Doing Just Enough (β = -.35, p <.001) was a stronger (negative) predictor of the total number of achievement standards attained than the *Doing My Best* screening items (β = .19, p <.001). The combination of these two motivation orientations accounted for 20% of the variance in total number of achievement standards attained.

An interesting pattern emerged regarding the level of achievement in achievement standards credits. For passing with the grade Achieved, the motivation orientations were not strong predictors. For example, the orientation

Doing My Best (β = .01, p = .76) did not predict the level of Achieved, although the orientation *Doing Just Enough* was a significant predictor, (β = -.08, p <.01). The overall regression only accounted for .5% of the variance.

On the other hand, these motivation orientations are better predictors of higher achievement. For example, both the *Doing My Best* orientation (β = .23, p <.001) and the *Doing Just Enough* orientation (β = -.38, p <.001) predicted achieving achievement standards with a grade of Merit (positively and negatively, respectively). The combination of these orientations predicted 24% of the variance in achievement standards with the grade of Merit. Similarly, attaining achievement standards with a grade of Excellence was predicted by both the *Doing My Best* orientation (β = .23, p <.001), and the *Doing Just Enough* orientation (β = -.35, p <.001) (positively and negatively, respectively). In combination, the self-ratings on the screening tool items in 2005 predicted 22% of the variance in gaining achievement standards with a grade of Excellence in 2006.

For other indicators of achievement, our screening items were not strong predictors. Although both *Doing My Best* (β = -.09, p <.001) and *Doing Just Enough* (β = .15, p <.001) predicted the total number of unit standard credit earned, these screening items only predicted 4% of the variance. Similarly, *Doing My Best* (β = -.10, p <.001) and *Doing Just Enough* (β = .08, p <.001) predicted the number of standards Not Attempted; however, this explained only a small percentage of the variance (2%). The significance of these results is not particularly meaningful, and is likely to be the product of very small differences that are magnified in large sample sizes such as ours.

Relationships with Demographic Variables

Several preliminary analyses were carried out for two selected achievement outcome results, achievement standards attained with Excellence and the number of unit standards attained by Year 11 students.

Gender. For both males and females, motivation orientations towards learning predicted attaining a grade of Excellence on achievement standards. For males, both the *Doing My Best* orientation (β = .21, p <.001) and the *Doing Just Enough* orientation (β = -.33, p <.001) were significant positive and negative predictors, respectively. These orientations explained 19% of the variance for males. Similarly for females, both the *Doing My Best* orientation (β = .24, p <.001) and the *Doing Just Enough* orientation (β = -.38, p <.001) were also significant positive and negative predictors, respectively. These orientations explained 24% of the variance for females.

For both males and females, these motivation orientations were not strongly predictive of the number of unit standards attained. For males, both the *Doing My Best* orientation (β = -.09, p <.01) and the *Doing Just Enough* orientation (β = .16, p <.001) were significant. However, these orientations only explained 4% of the variance for males. Similarly for females, both the *Doing My Best* orientation (β = -.07, p <.05) and the *Doing Just Enough* orientation (β = .13, p <.001) were significant. However, these orientations only explained 2% of the variance for females, which is not educationally meaningful.

Ethnicity. For NZ European students (the largest group), the number of achievement standards with a grade of Excellence was predicted significantly by both the *Doing My Best* (positive predictor) orientation (β = .27, p <.001) and the *Doing Just Enough* (negative predictor) orientations (β = -.30, p <.001). These orientations explained 22% of the variance for Europeans. For Asian students, the *Doing My Best* orientation (β = .11, p = .07) was not significant, but the *Doing Just Enough* orientation (β = -.42, p <.001) was a significant negative predictor. These orientations explained 20% of the variance for Asian students. For Māori, both the *Doing My Best* orientation (β = .17, p <.001) and the *Doing Just Enough* orientation (β = -.29, p <.001) were significant, explaining 12% of the variance for Māori. And lastly, for Pasifika students, the *Doing My Best* orientation (β = .14, p = .13) was not a significant positive predictor, but the *Doing Just Enough* orientation (β = -.33, p <.001) was a significant negative predictor of Excellence grades. These orientations explained 9% of the variance for Pasifika students.

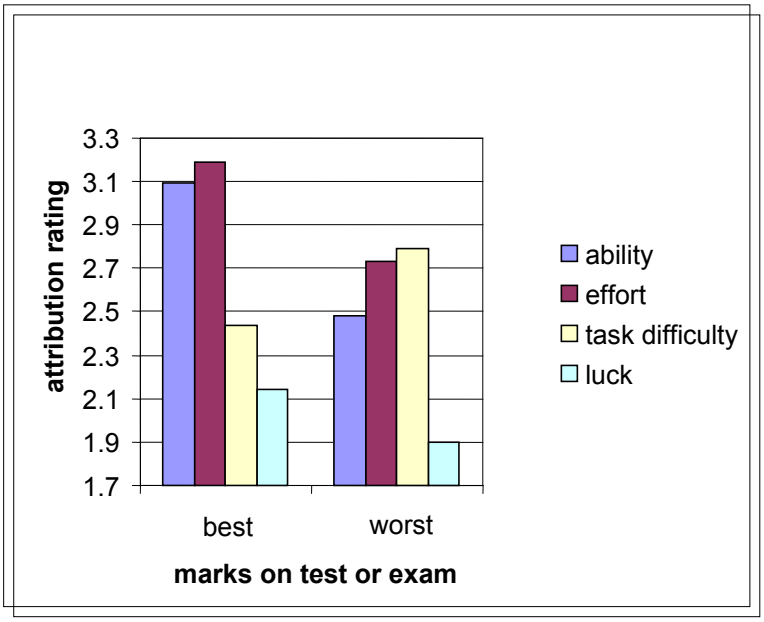
For the number of unit standards attained, only small percentages of the variance were explained by these motivation orientations. For European students, the regression was significant, but only 5% of variance was explained. The *Doing My Best* orientation (β = -.08, p <.05) and the *Doing Just Enough* orientation (β = .18, p <.001) were significant. For Asian students, the regression was marginally significant (p = .05), and only 2% of the variance was accounted for; with only *Doing Just Enough* (β = .15, p <.05) a significant predictor. For Māori students, the regression was not significant, $F(2,226) = .93$, p = .40. Similarly, for Pasifika students, the regression equation was not significant, $F(2,114) = .66$, p = .52.

Attribution Results for Year 10-11 Students

Attributions for Achievement Task Performance

As described above, a section of the survey asked that students rate the extent to which four different attributions, ability, effort, task difficulty and luck had an influence on one of their best marks and on their lowest mark on a test or exam in English. The mean ratings of each attribution of students in Years 10-11 are shown in Figure 1.

Figure 1. Attribution ratings for best and worst marks (range 1-4)



These attributions were analysed with a repeated measures 2 (Outcome: best grade, worst grade) by 4 (attribution: ability, effort, difficulty/ease, and luck) analysis of variance. The results show an outcome by attribution interaction, $F(3,4043) = 588.59$, $p < .001$, $\eta^2 = .127$. Students rated the two internal causes, ability and effort, higher for best grades than worst grades, whereas they rated one external cause, difficulty, higher for worst marks than best marks. Counter to the usual pattern where luck is rated higher for failure (bad luck) than success (good luck), they rated luck higher for their best performance in comparison to ratings for their worst performance.

Table 18. Male and female students' attribution ratings for their best and worst marks (range 1-4).

		Ratings by Males	Ratings by Females
Best Grades	Ability	3.05	3.13
	Effort	3.08	3.32
	Task difficulty	2.44	2.43
	Luck	2.19	2.09
Worst Grades	Ability	2.40	2.57
	Effort	2.68	2.78
	Task difficulty	2.75	2.84
	Luck	1.98	1.80

The attributions classified by gender are shown in Table 18. The impact of gender on attributions for best and worst grades was tested with a mixed design 2 (gender) by 2 (Outcome: best grade, worst grade) by 4 (attribution: ability, effort, difficulty/ease, and luck) analysis of variance. In addition to the outcome by attribution interaction seen in the previous analyses, the results show an attribution by gender interaction, $F(3,4032) = 44.83$, $p < .001$,

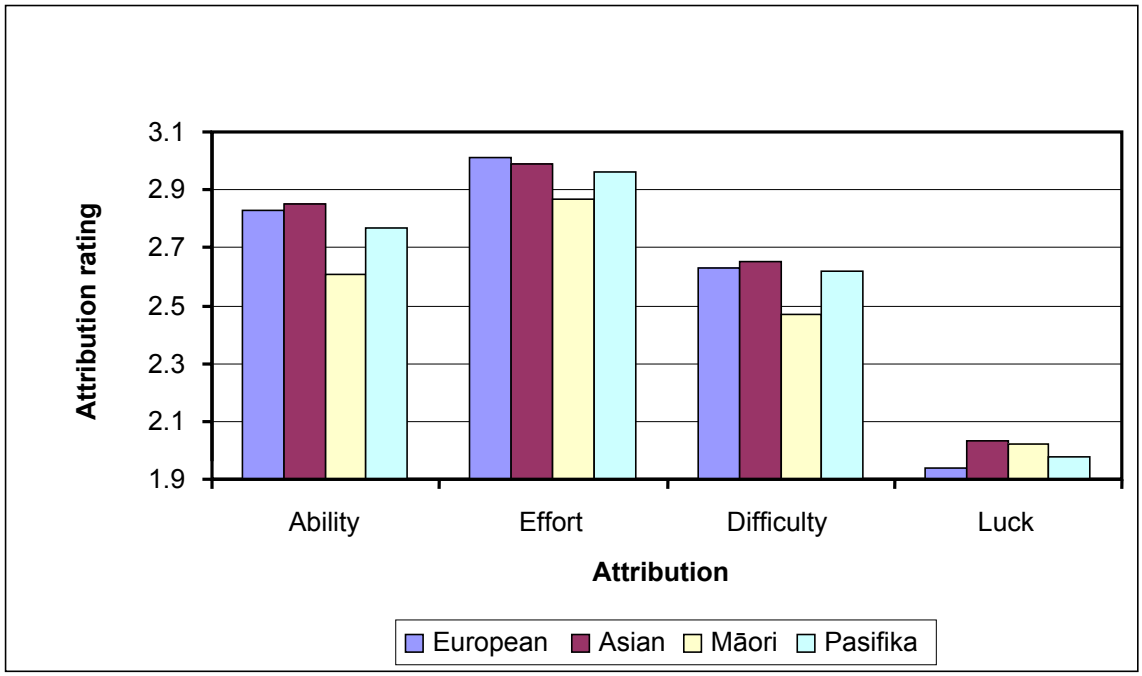
η^2= .01, and outcome by attribution and gender interaction, $F(3,4032)$ = 11.38, $p < .001$, η^2 = .127. Consistent with most previous findings regarding gender and attributions, female students attributed their best marks more to effort (an 'unstable' or changeable cause) than male students, whereas they attributed their worst marks more to lack of ability and task difficulty (relatively stable or unchangeable causes) than did male students.

Table 19. Attribution ratings for best and worst marks for different ethnicities (range 1-4).

		European	Asian	Māori	Pasifika
Best	Ability	3.143	3.097	2.920	2.972
	Effort	3.250	3.231	3.074	3.150
	Task difficulty	2.412	2.417	2.300	2.393
	Luck	2.033	2.121	2.172	2.028
Worst	Ability	2.510	2.610	2.294	2.575
	Effort	2.772	2.752	2.672	2.776
	Task difficulty	2.848	2.876	2.639	2.850
	Luck	1.847	1.931	1.870	1.925

The attributions for different ethnic groups are shown in Table 19. The impact of ethnicity was tested with a mixed design 4 (ethnicity) by 2 (Outcome: best grade, worst grade) by 4 (Attribution: ability, effort, difficulty/ease, and luck) analysis of variance. In addition to the outcome by attribution interaction seen in the previous analyses, the results show an attribution by ethnicity interaction, $F(4,1821)$ = 4.75, $p < .01$, η^2 = .01. The means for this interaction are shown in Figure 2 below. The differences are that Māori students attributed their outcomes less to ability, effort and task difficulty than did European, Pasifika and Asian students, but as much to luck as students from these other ethnic groups.

Figure 2. Attribution ratings by ethnicity (range 1-4)



What this result shows is that Māori students are less likely to attribute their positive and negative outcomes to internal causes that they have some control over in comparison to European, Asian and Pasifika students. It is noteworthy that the only attribution where Māori students score higher than the other three groups is in attributing their high mark to luck.

Relationships across Attributions

Generally, attributions for best and worst marks were not highly correlated. The strongest correlation was between good and bad luck. When students attributed best marks to good luck, they were likely to also attribute worst marks to bad luck (see Table 20).

Table 20. Correlations across attributions for best and worst marks in English.

	Best-Ability	Best-Effort	Best-Easy Task	Best-Good Luck
Worst-Ability	.09***	.13***	.09***	<.01
Worst-Effort	.15***	.14***	.06**	-.14***
Worst-Hard Task	.10***	.12***	.15***	.04
Worst-Bad Luck	-.06***	-.09***	.12***	.40***

** = p<.01, *** = p<.001

These correlations could have been weak because of the restriction involved when each attribution is measured by only 1 item, which affects the reliability of responses. Therefore, we analysed the combined internal attribution responses for ability and effort compared to the combined external attribution responses of task difficulty and luck. Students who attributed their best mark to internal factors were also more likely to attribute their worst mark to internal causes (r = .19, p < .001). Likewise, students who attributed their best grade to external factors were also more likely to attribute their worst grade to external causes (r = .30, p < .001). For the worst mark, there was a positive correlation between internal and external attributes (r = .20, p < .001), but these were not correlated for the best mark.

Relationship of Attributions to Motivation Orientations

Students who attributed their best mark to ability and effort were more likely to exhibit a higher *Doing My Best* orientation and less likely to exhibit a *Doing Just Enough* orientation. Students who attributed their best mark to luck were slightly less likely to exhibit a *Doing My Best* orientation, and more likely to exhibit a *Doing Just Enough* orientation.

Table 21. Attributions for best marks by motivation towards learning.

	Ability	Effort	Easy	Good Luck
Doing My Best	.31***	.32***	.02	-.11***
Doing Just Enough	-.20***	-.19***	.07***	.26***

*** = p < .001

Attributions for students' worst grades were generally not related to the achievement orientations we measured. The one significant correlation that emerged indicated that having the motivation orientation of *Doing Just Enough* was related to attributing one's worst grade to bad luck.

Table 22. Attributions for worst marks by motivation towards learning.

	Ability	Effort	Hard	Bad Luck
Doing My Best	.03	.01	.01	-.06***
Doing Just Enough	.01	-.04**	.02	.16***

** = p<.01, *** = p<.001

Next, we investigated the relationship between external and internal attributions and motivation orientation. Attributing one's best mark to internal reasons was related to a high *Doing My Best* orientation and a lower *Doing Just Enough* orientation. The next most meaningful correlation was between *Doing Just Enough* and attributing one's best mark to external factors.

Table 23. Internal and external attributions by motivations towards learning.

	Best-Internal	Worst-Internal	Best-External	Worst-External
Doing My Best	.38***	.02	-.06***	-.03
Doing Just Enough	-.23***	-.02	.23***	.12***

***p < .001

To test whether attributions can predict motivation orientations, a series of four regressions was carried out to test the relationship between attributions for best and worst mark and the *Doing My Best* and *Doing Just Enough* orientations. These revealed some positive relationships. Overall, the four attributions for the student's best mark explained 15% of the variance in *Doing My Best*. Similar to the correlation results, attributions of ability (β = .22, p < .001), effort (β = .24, p < .001), and luck (β = -.05, p < .01) were significant predictors. However the attribution of easy task (β = -.02, p = .25) did not predict the orientation *Doing My Best*. Similarly, the four attributions for the student's best mark explained 12% of the variance in *Doing Just Enough*. Attributions of ability (β = -.12, p < .001), effort (β = -.13, p < .001), easy task (β = .06, p < .001), and luck (β = .22, p < .001) were all significant predictors of the orientation *Doing Just Enough*.

We were also interested in whether attributions for the worst mark predict the *Doing My Best* and *Doing Just Enough* orientations. For the *Doing My Best* orientation, combined attributions predicted only 0.4% of the variance. For the *Doing Just Enough* orientation, combined attributions predicted 3% of the variance. While some of these predictors are statistically significant in these regressions, the beta weights are very small. The strongest predictor was the attribution of bad luck predicting the *Doing Just Enough* orientation (β = .17, p < .001).

Relationship of Attributions to Achievement Outcomes

Attributing one's best mark to the internal factors of ability and effort was associated with attaining more total achievement credits, more achievement credits with Merit and Excellence, and fewer total unit standard credits. The attribution "task is easy" was unrelated to achievement. Attributing one's best mark to good luck was associated with gaining slightly more unit standard credits, fewer achievement standard credits, and fewer achievement standard credits with Merit and Excellence (see Table 24).

Table 24. Relationship of attributions for best marks with NCEA achievement results.

	Ability	Effort	Easy	Good Luck
Total Credits	.16***	.13***	-.03	-.12***
Unit Standard Credits	-.15***	-.07**	<.01	.10***
Achievement Standard Credits	.22***	.16***	-.03	-.16***
Credits Achieved	.03	.05	.01	-.04
Credits Merit	.26***	.16***	-.03	-.20***
Credits Excellence	.22***	.15***	-.04	-.13***
Not Attempted	-.12***	-.08***	.01	.07***

**p<.01, ***p<.001

Attributions for one's worst mark were only weakly related to the different NCEA achievement results.

Table 25. Relationship of attributions for worst grades with NCEA achievement results.

	Ability	Effort	Difficult Task	Bad Luck
Total Credits	.06**	.06**	.05*	-.08***
Unit Standard Credits	.03	-.01	<.01	.01
Achievement Standard Credits	.05*	.07**	.06*	-.08***
Credits Achieved	.06**	.08***	.02	-.06**
Credits Merit	.03	.06*	.06**	-.09***
Credits Excellence	.01	-.02	.05*	-.01
Not Attempted	-.02	.05*	.01	-.01

*p<.05, **p<.01, ***p<.001

Regressions were also performed where the two motivation orientations *Doing My Best* and *Doing Just Enough* and the students' attributions were entered as predictors of grades. The results showed that the strongest predictors of attaining standards with Excellence were the *Doing My Best* orientation (related positively) and the *Doing Just Enough* (related negatively). The number of Excellence grades was also predicted by students' attributions that their best marks were due to ability and their worst marks were due to task difficulty. This pattern of attributions corresponds to a self-serving bias.

In contrast, Achieved grades were predicted by the *Doing Just Enough* orientation, and *Doing My Best* was no longer a predictor. Achieved grades were predicted by the same pattern of attributions representing a self-serving

bias as seen with Excellence grades (attributing best marks to ability and worst marks to task difficulty). However, an additional significant predictor of Achieved grades was students attributing their worst marks to a lack of ability. In other words, unlike students who get more Excellence grades, students who attained more Achieved grades tend to attribute their worst marks to a stable cause that is hard to change, that of ability, an attribution pattern that weakens motivation (Weiner, 1985, 1986).

Summary of Study 3 Findings

Study 3 shows that a brief screening tool for student motivation not only correlates with the longer motivation survey developed by Meyer et al. (2006), but has high reliability and generates highly predictive results. The findings show that even with this short 8-item measure of motivation, the two motives of *Doing My Best* and *Doing Just Enough* are strong predictors of student achievement in NCEA, with *Doing My Best* predicting positive outcomes and *Doing Just Enough* predicting relatively negative performance. Aspects of our findings also support the development of an additional subscale to measure social and "belongingness" dimensions of motivation.

Further, our results show that these motivations relate to students' attributions for their performance in an English exam or test. Students who report *Doing My Best* attributed their best result to their own efforts and ability and discounted luck, whereas students motivated to *Do Just Enough* discounted the role of effort and ability and attribute their best result to luck. Students' attributions for their own results also had a direct relation to their actual grades in NCEA. Students who attributed their results to their own effort and ability and discounted luck were the ones who gained more Merit and Excellence grades. The reverse pattern is shown for students who obtained more unit standards and more Achieved level grades. These findings show that students' perceptions of their own motivations and the causes of their success and failure are interconnected and relate to their actual outcomes. This short measure thus shows strong potential as a screening measure for students in order to tap those motivations and attitudes that hamper performance.

Study 3 also revealed that students engaged in moderate amounts of part-time work (1-10 hours per week) show a higher level of achievement than students doing no part-time work or students doing more than 10 hours part-time work per week.

Study 4: Parent, Teacher and Student Attitudes on Motivation

Focus Group Interviews: Parents, Teachers and Students

Our survey and interview data from the 2005-2006 research suggest patterns of interrelationships between aspects of school policy and practice on the one hand and student study behaviour and achievement on the other. This research also revealed that some student "groups" behaved in different ways. Additional focus group interviews with teachers, parents and students across a range of school communities allowed us to probe particular patterns of stakeholder perspectives that have policy and practice implications for schools, particularly with regard to choices and opportunities and the values of different cultural groups.

The focus group interview data analysed qualitatively comprise an important component of our triangulated mixed methods design (Creswell, 2005). The focus group data were first analysed separately from both the quantitatively analysed survey data and the qualitatively analysed individual interview data. Finally, all data sources were reviewed and interpreted collectively in our summary sections towards the identification of meaningful patterns of findings to inform further developments of educational practice.

Samples for the Focus Group Interviews

This project was not a comprehensive research study designed to address conclusively all the issues raised. However, purposive sampling did allow us to develop hypotheses that can be investigated further both quantitatively and qualitatively in other data sources and in future research. All focus groups were conducted from mid-March to early May 2007.

Ten student focus groups were carried out at several co-educational state and integrated schools in both the North and South Islands across a range of decile levels (3 low and 2 high decile schools). Three of the schools were in the Auckland region, two of the schools enrolled high percentages of Māori and Pasifika students, and one school was a wharekura (Māori immersion) programme. Five of the focus groups from the five schools involved mixed groups of Year 11 to 13 students currently completing NCEA. Five of the focus groups from five schools involved Year 10 students who were not yet involved in NCEA; these students were of interest in order to gauge their prior perceptions of NCEA particularly in comparison to our findings for Year 10 in 2006.

Parent and/or teacher focus groups were also conducted at selected schools to seek stakeholder interpretations of hypotheses emerging from the student groups. One parent focus group was conducted at a high decile South Island school. Three teacher focus groups were conducted, one at a high decile South Island school, and two at low decile schools in the Auckland region.

Data Collection and Analysis

All focus groups were led by two researchers, one serving as facilitator introducing the questions and the other as note-taker who also checked responses after each question by reading out recorded responses to the group for any additions and/or edits. Different facilitators led each of the focus groups based on both experience/expertise and demographic characteristics. The parent focus group was facilitated by two parents not otherwise involved in the project. They had extensive experience in conducting such interviews, had conducted focus groups for the research in 2006, and were involved in the NZ School Trustees Association in various roles. Each of the student focus groups involved an experienced researcher as note-taker and a young researcher, closer in age to the students themselves, as facilitator. In the two schools in the Auckland region with predominantly Māori and Pasifika students, the two researchers were both Pasifika. One was fluent in Te Reo Māori, and both were demographically younger. Because these researchers were otherwise not connected with the project, a training session was conducted covering project procedures for the focus group sessions. Similarly, these latter researchers conducted the teacher focus groups in the two Auckland region schools with high proportions of Māori and Pasifika students, whereas teacher focus groups in the other three schools were conducted by one senior and one younger researcher.

For the Year 10 student focus groups, questions focussed on what they knew about NCEA; how they learned about NCEA; what personally sounded good or not so good about NCEA; what kind of feedback on their work and information on their own learning mattered to them, and why. For the senior student focus groups (who were doing NCEA), questions focussed on what they liked best and least about NCEA; whether they thought NCEA motivated good study behaviour and achievement, and why or why not; what motivates students to learn; what makes students want to do their best or motivates them to do just enough to get by; what they thought about the record of learning, including improvements that could be made; whether they thought doing well on NCEA mattered, and why or why not. Additional questions and issues were specific to different groups and were developed in collaboration with key stakeholders.

The data were analysed qualitatively following well-established procedures to identify themes that were also then cross-referenced to themes that had emerged from our 2006 results and other data sources (Bogdan & Biklen, 1998; Charmaz, 2006; Strauss & Corbin, 1998).

Major Themes from Parents

These data must be interpreted particularly cautiously as they represent the views of only one group of parents at a high decile state school. All 10 parents in the group were women and members of the Parent Teacher Association. The group also included one primary teacher, one intermediate teacher and 2 secondary teachers. They were asked to give their responses as “parents” not as teachers, and the facilitators reminded the group of this perspective on several occasions throughout the session. However, this is an

unrepresentative sample, and the information is included here only as an indicator of possible questions for future research.

The initial analysis attempted to identify themes according to separate questions asked. However, it became evident that different aspects of four major themes actually captured well the nature of parent responses across the questions. Thus, rather than analysing the data separately for the six different questions, the data were analysed across all responses. Reported here are the four themes parents emphasised as important to how students learn and are motivated to learn. These are: *nature of the learning task or activity*, *earning credits*, *teaching, learning, and assessment processes*, and *the kind of person the student is*. Each of these is described briefly below with sample comments reflecting the issues following.

Nature of the Learning Task or Activity: This theme concerns the relevance of and nature of the actual activities reflected in the teaching and assessment for specific subjects. There were a large number of comments from parents about the kinds of learning and assessment activities they believed students preferred, including strong opinions that boys and girls differed in their task and activity preferences. They felt that students preferred working hands-on with things that moved and working on projects and systems, with fabrics and metal. Parents mentioned the importance of interactions with other students during learning, and also felt that the nature of the subject mattered stating that students worked on what they enjoyed. Boys were seen as being particularly project-driven in comparison to girls. Typical comments included:

> [The] subject makes a difference…what [child] enjoys
>
> Subject related and hands on.

Earning Credits: Parents commented about the accumulation of credits under NCEA, ranging from comments regarding missing credit such as “no credits for practical work” to concern that students would work only for credits. Typical comments that reflected group concerns included:

> It’s far too easy to get credits
>
> [Students] can manipulate the system; [this is] unfair in that it can impact on career choices down the track
>
> [Students] don’t need to do externals as they already have enough internal credits
>
> Not enough credits for getting Excellence—same credits for Achieved as Excellence
>
> Students only think about 80 credits; doesn’t really matter [to them] where they are sitting [compared to other students]
>
> Kids not bothering to go to final exam because they have enough credits
>
> Lots of kids don’t bother to turn up at school when they have actually got their credits—motivation is lost.
>
> Academic subjects need more incentive—more weighting

Interestingly, one parent also pointed out that the previous School Certificate and Bursary examination system also had problems. Others agreed with this. Of the ten parents in this group, only one parent felt that the old system was better.

Teaching, Learning and Assessment Processes: Comments made in this category concerned the impact of teaching and learning processes on student motivation, including choices available to students, curriculum content, appropriate assessment, marking systems, curriculum flexibility, and responding to industry needs.

There were various comments about grading and the criteria for grading, and parents expressed some frustration that students could achieve at the level of Excellence but drop to a lower grade if they made "small errors." Sample comments regarding grading criteria included:

> [I was] not aware of the criteria to be able to progress to next level. Criteria needs to be clear to parents and students
>
> Criteria is good—knowing what is required
>
> Written feedback not tied to criteria
>
> Learning outcomes—need more explanation to students on requirements (criteria) for grading
>
> Clear criteria before assessment

Overall, parents were divided on the issue of whether they wanted more spread for the grades, with five parents satisfied, 3 wanting a wider range (e.g., more information on the margins between Achieved and Merit and between Merit and Excellence), and 2 wanting percentage marks. One parent who was also a primary teacher was very outspoken on this issue.

One parent expressed a concern that some schools could mark easier than others, but another parent felt this issue was addressed "really well" by NCEA and "they have to all do the same thing." Parents agreed with a statement made by one parent that problems were being exacerbated by media coverage:

> I think that the problem is the media. We need to stand back and trust the system, it is parents who don't understand the NCEA. We should stand back and trust the system and the feedback from the teachers.

The Kind of Person the Student Is: A theme that emerged suggested that motivation is a static, unchanging personality trait. This conception of motivation orientation is similar to conceptions of ability as static rather than incremental. The parents in this focus group seemed to believe that some students were permanently highly motivated and others would permanently do only what was needed to get by.

> [NCEA is] good for year 12 daughter…likes working in chunks. Could be different for son—less pressure for an average student
>
> Works well for middle of the road students

Slow learners will be left behind

High achievers just want to [achieve]

The majority of the parents, 7 of the 10, believed that NCEA best suited "middle of the road" students. Four parents stated that they felt high achieving students were not being sufficiently motivated to achieve under NCEA, while two others disagreed with this statement and emphasised it was up to the school to play an important role in establishing excellence and motivating students.

Major Themes from the Teachers

Our focus group data were not intended to provide generalisable information regarding teacher opinions about the NCEA or even about what motivates students. Instead, we wanted to probe particular issues that have arisen with regard to the NCEA and the relationships of aspects of assessment with motivation to learn and achieve. Among the issues that have been highlighted across the New Zealand secondary educational scene is the extent to which two groups of students are motivated to do their best, high ability students, and Māori and Pasifika students.

Thus, in the interest of investigating themes worthy of future research on a wider scale, we approached three schools to provide us with a purposive sample of teachers working with these students. One school is a high decile South Island school with a strong record of high achievement by students in both NCEA and Scholarship. The second school is a *wharekura* where Māori students are continuing their immersion school experience right across the compulsory sector. This school also has a reputation for promoting student achievement. The third is a low decile school in the Auckland region with a strong record in promoting achievement for a student population comprising primarily Māori and Pasifika. All are state schools.

Teachers at the three schools were asked to respond to four questions about motivating students to achieve and specifically about the impact of NCEA on students. These were:

1. What do you think has an impact on student motivation and achievement?
2. Do you think NCEA motivates differently students who are high achievers, low achievers or 'students in the middle'? Do you think NCEA motivates students differently compared to previous systems?
3. NCEA offers students lots of choices, including subject choices, assessment choices, being able to enter for standards as early as year 10, take credits across levels and so on. Which choices do you think are good and why? What things would you change and why?
4. Do you have any evidence that students slack off more than they did before NCEA? For example, do they quit after getting 80 credits, deliberately decide not to sit externals once they've passed internals, leave exam books blank on purpose for a 'standard not attempted' rather than a fail? Do you recommend any changes? Is the NCEA an appropriate system to measure student achievement?

Similar to the results for the parent focus group data, themes emerged across the responses to all four questions rather than being specific to any one question. We were able to code the teachers' comments about the impact of factors including the NCEA on student motivation and achievement into seven major themes. Four themes were identical to those emerging in the parent data (*Nature of the learning task or activity*; *earning credits*; *teaching, learning and assessment processes*; and *the kind of person the student is*) while three additional themes were more evident in the teacher data (*personal influences*; *subject importance/utility*; and *time*). Each is briefly described below followed by examples of comments made by the teachers.

Nature of the Learning Task or Activity: Comments in this category highlight preferences that students have for certain kinds of actual activities specific to particular subjects or task components. Teachers indicated that students enjoyed participating in practical applications of the theory which gave meaning to the theory. Comments illustrating the attraction for students based on this dimension included:

> Students base their choices on what they think is fun
>
> Students would want to work in the workshop…. activity related
>
> Boys motivated by movement (workshop)—what they build is important. The way design classes is run is very important, if it moves or involves systems then motivates students more
>
> In workshop in the design process, they need to use the technology

Earning Credits: This category reflects aspects associated with achieving credits at each level, including credit accrual, selection of credits, assessment of credits and value of credits. Teachers commented:

> They are picking and choosing their credits, 'farming credits', so they sometimes do the easy credits
>
> Unit standards in Year 10 give students confidence, that is, they have some credits in the bank
>
> Both unit standards and achievement standard credit classes in maths can leave with same result or number of credits, but achievement standard credits [are] more demanding academically. Don't know how to solve it…solve it by how far we go in the subject, or don't compare subjects just say XX credits in mechanics is just that
>
> There is a difference in credit value. Students succeed more with internal than external credits
>
> If didn't have a limit they wouldn't know it was time to stop. What purpose does the certificate achieve?

Teaching, Learning and Assessment Processes: Teachers commented on how student motivation and achievement could be affected by classroom organisation, curriculum delivery, assessment tasks, marking criteria, and feedback on learning and performance. In contrast to school organisation, teaching strategies, or curricula, however, the vast majority of comments

related to the impact on ongoing assessment and feedback across the year on student motivation and achievement:

> The students can see their progress throughout the year, and not have to sit one big exam at the end of the year
>
> [NCEA is] a system which meets the needs of students from different backgrounds—not having a one size fits all system
>
> It's much better, not like the old days, for example when my whole life was determined by one exam. Now our students don't have to go through that, thank goodness
>
> One exam has never been fair for Māori students
>
> NCEA has motivated my students as they can try a couple of times on something if they don't do well
>
> Class size has an impact because of what the teacher can achieve practically, for example, feedback. Class sizes need to be smaller to effectively teach
>
> Now we have pockets of motivation [tests] throughout the year, and they get feedback
>
> The first assessment needs to be achievable so students are motivated. Every kid should start the year with a feeling of success. [It] needs to be small so that it's achievable. This then creates a better environment
>
> The gradual assessment style of NCEA has been awesome, gradual work, gradual progress
>
> The criteria for assessing students may need changing—and feedback too. The students who do well need to know [this] through the assessment procedures. Students need something to strive for, like excellence
>
> It's motivating because the work is progressive and students get the Record of Learning to see their progress

The Kind of Person the Student Is: Similar to comments made by some parents from the high decile school, there were also suggestions from some teachers that motivation to achieve was a static personality trait rather than something affected by schools, teachers and other influences. Interestingly, teachers who made these comments were also from a high decile school, whereas teachers from the low decile and wharekura schools were quite emphatic in not putting their students into categories. Comments from teachers in the high decile school included the following:

> The ones who slack off are marginal, they will go through life like that
>
> [NCEA] has potential to motivate average but top students will always be motivated
> An excellent student doesn't need to get excellence all the time
>
> The reality is some concepts are never achievable by lots of kids. I don't know a solution but the currency is flawed
>
> The high end students are competitive

In contrast, comments from the teachers in the other two schools reflected a different point of view, emphasising that it was up to the teachers and the schools to ensure that students are motivated at all levels:

> NCEA motivates all levels of students (high, middle, low)—we don't like those terms though, so we don't perceive any differences. We think all students are high achievers here, and we tell our students that.
>
> Our students are motivated to do well, because that's the way we operate
>
> As a Kura school, we motivate our students from the Kohanga upwards, that's the benefit of the school

Personal Influences: In contrast to the previous category where motivation may be viewed as a personality trait, many of the teacher comments emphasised various sources of influence on student motivation including support from teachers, the school, and family:

> Good attitudes from teachers, good school philosophy has been motivating from my perspective
>
> Supportive schools like ours
>
> Families can motivate their students
>
> Teachers' attitudes (positive and negative) impacts too and makes a difference.
>
> Family issues impact as well. What is going on at home can either motivate or not motivate a child

Teachers at the high decile school were more likely to comment on the impact of the family and the home environment, and no comments were made in this teacher focus group about the impact of the teacher on motivation. Only one comment was made in this group about the impact of the adults directly on children's achievement and motivation:

> Parents and home environment [have an impact]

There were many comments in this focus group about the impact of the nature of curricular practices and even class size on student learning and motivation. No comment was made regarding the general impact of teachers on motivation or something specific that a teacher or the school could do to specifically motivate students to do better.

Subject Importance/Utility: This theme relates to the perceived importance and utility of the subject or qualification for future goals such as employment or tertiary study. University entrance was mentioned only once by a teacher in the *wharekura* focus group who commented that students could be motivated by *"an incentive to get to university."* Only three other comments, made by teachers at the high decile school, related to future use:

> Within a subject, standards are industry related. Industry is important—relevant qualifications

> Employer for a degree in Arts, wants experience in psychology
>
> Students need to be flexible thinkers for a future that we don't know how to predict, so they need to be adaptable. Change is rapid so schools need to change as well to reflect these changes. This is especially true for technology….Are we teaching for the past or the future? Everything needs to be updated. Not overall change, a little bit each year, and the teachers need to want to change.

The last comment, in fact, seems to suggest that the emphasis of secondary school should not be to focus on specific skills but instead on more generic thinking and organisational skills for an unpredictable employment future.

Time: Teachers also mentioned other pressures and priorities in students' lives that impinge on effort and commitment to school and achievement in school, independent of other influences on motivation. Only three comments were made about these issues, all by teachers from the high decile school:

> Change year round is holidays, Christmas interrupts, hard for students to concentrate
>
> Students that can do better, kids are busier than ever in their life and they are picking and choosing their credits 'farming credit, so they sometimes do the easy credits
>
> Students are successful in life and busy sometimes, NCEA doesn't reflect that, things happen in their lives, they don't have time

Major Themes from the Students

It is important to emphasise again that the focus group data were not intended to provide generalisable information regarding opinions about the NCEA or factors that do and do not motivate students to achieve. Because we wanted to probe particular aspects of motivation for students, we identified a purposive sample of secondary schools where key student populations might shed light on selected issues.

Our previous research found patterns of motivation and achievement that differed significantly for variables representing socio-economic status and ethnicity. The NCEA is not intended to be a one-size-fits-all qualification, but was designed to be more flexible and adaptable to address the particular learning needs and interests of a more diverse student population in comparison to the system it replaced. Hence, we regard student opinion from diverse student groups regarding the impact of the NCEA on their learning and achievement as a crucial input that should inform interpretations of our research findings at every stage. Focus groups are an additional student voice, augmenting that available from the student surveys and other interviews. They allow more to in-depth discussion around particular issues as they emerge from the various sources of evidence and even as they are raised in public discussions of the NCEA in New Zealand. The themes emerging from qualitative analysis of focus group interviews with students will be examined in conjunction with findings from other data to plan future directions for research on student motivation and achievement. These

student interviews also provide an update on student perceptions and understandings of the NCEA just prior to the design changes announced in 2007. These data thus provide a baseline to investigate for changes in student attitudes following these changes in policy.

Our purposive sample of 10 focus groups included two groups from each of the five schools; one was comprised entirely of Year 10 students while the other included a range of students from Years 11-13. Schools were asked to invite 6-10 students to participate in the focus groups. Two of the schools are high decile, one located in the North Island and the other in the South Island; all are state schools. Three of the schools are low decile, one South Island and two North Island. One of the schools is a *wharekura* where the curriculum is delivered entirely in Te Reo Māori, and three of the five schools are in the Auckland region.

Results from the Year 10 Focus Groups

For the Year 10 students, we were interested in what they knew about NCEA and who told them or how they had learned what they knew. We then asked them what sounded good about NCEA and what did not sound good about NCEA. The third question focussed on how they thought NCEA would affect their study at school and how it would affect their study choices (which they were then in the process of making in preparation for Year 11). The fourth question queried what kind of feedback on their work mattered to them, and what kind of information they would like to have about their own learning and why. These questions parallel those asked of students a year earlier, so provide opportunity to investigate any changes over time. In addition, one focus group was asked what makes them want to do their best, and what makes them likely to do just enough.

Knowledge of NCEA: Year 10 students understood the major features of the NCEA including that it was a New Zealand national qualification with 3 certificate levels. They knew it had specific course requirements for certain subjects as well as both literacy and numeracy requirements; comprised standards to be completed to earn four different grades; and both internal and external assessments were part of the system. They had learned about NCEA primarily from teachers and the school. This included booklets from teachers, letters sent home from their form teachers and posters around the school. Some had heard a great deal from older siblings or friends who were involved in NCEA as well as from parents, particularly those who were also teachers. Students also indicated they had heard about NCEA through the media, including posters, television programmes and other sources. The Team-Up website was not mentioned.

What sounds good/not so good about NCEA: Students liked what they had heard about being able to make choices and that NCEA assisted with developing good study habits because they had to work throughout the year. There were mixed opinions about whether NCEA was easy or hard—students mentioned they liked it because it was easy, while others mentioned they liked it because they enjoyed being challenged and succeeding. Comments included the following:

> Can aim to do better each time I do a piece of work
>
> Don't have a big exam at the end of the year like 5th Form Certificate or Bursary
>
> I can get a good job if I pass level three
>
> I can get into university, and that's a good thing
>
> Choose subjects you can do so you can structure it for your job

A student at the *wharekura* commented *"We know it's awesome"* and another student commented *"There's heaps of work involved."* There were only a few comments made by students at a high decile school about getting credits for things such as the following:

> [You get] credits for outside activities—leadership, sailing regalia, shooting. My friend got 37 credits for all courses, half done already
>
> 4 credits for sitting on chair properly, posture at the computer
>
> Get credits for different things, like coaching teams, using common sense

What the students said they did not like about NCEA included the following statements:

> Some teachers/parents put too much pressure on you—the same under the old system
>
> All of the teachers try to make you worried about it
>
> If you don't know what you want to do, you can take the wrong subject and then have to learn again
>
> Heard on news that some overseas universities found NCEA difficult to interpret
>
> Some people not challenged more, want Excellence for working hard not just answering questions
>
> Gotta do heaps of homework
>
> Have to manage time better I think

Quite a few comments were made about grading and marking issues by the Year 10 students (note that some of these students were taking Level 1 subjects early, while in Year 10):

> Got NA when I didn't go to the exam because didn't know anything, better than failing grade. But if didn't go, that's the same as a fail
>
> Would be quite good to know how much of Achieved, Merit, Excellence you get; should get a percentage; should be a wide range of scores you can get
>
> Feels good to get lots of Es
>
> Easier options you can just pass, don't have to challenge yourself

> It's easier to pass if there's a percentage. [Other students disagree with this comment, then the next comment was made by another student] Percentage may be less confusing than credits when you know how well you do.
>
> Some people not challenged more, want Excellence for working hard not just answering question
>
> Don't get exact results, could have just missed out getting Excellence, with Merit. Instead, give us certain number of points
>
> Could miss out with some Excellence questions but get same Merit as someone else who barely got Merit
>
> Excellence should get more credits

The Impact of NCEA on Study and Subject Choices: Year 10 students generally expressed that they would have to work harder under NCEA and would have to "focus more." They believed they would have less time available to do extra-curricular activities such as sport, and they indicated they would have a greater range of subjects to choose from. Typical comments follow:

> If I want good grades, have to do lots of study
>
> Depends on what job you want—have to work hard
>
> Will help me, get me to study
>
> Would spend more time studying
>
> NCEA won't really affect study, the subject affects my study
>
> Won't matter, because if you know what you want to be, choose subjects based on that
>
> Won't affect my choices because have always known what I want to do
>
> I take what I'm good at
>
> Some subjects have unit standards, don't want to do because can't get Excellence

Feedback that Matters: Students were vocal about wanting feedback regarding their learning and about the kind of feedback on their work that matters to them. Sample comments follow:

> Written feedback is good
>
> Teachers should tell us more how we are doing
>
> Want to know how we are doing because we want to always do better
>
> I want to know about my progress, that's important because that's the teacher's job
>
> We want to know how we are doing [All students in the focus group agreed]
>
> What I got wrong, tell me what was done wrong so we can correct ourselves

> Even if 100%, I want to know what I did well
>
> Whether the teacher thinks you should keep it up—keep trying
>
> What you need at the end, how it all comes together at the end
>
> Heaps about getting credits, but not enough about how to pass the subject

The vast majority of the comments for this question focussed on feedback and information on the task, whereas there were only four out of dozens of comments mentioning wanting to compare oneself with others, for example, *"How do I compare with others my age?" and "What is the country average?".*

Doing My Best or Doing Just Enough: Students in one of the focus groups were asked what makes you want to do your best, and their responses fell into four categories—choice of career or future goal; expectations of others including parents; rewards; and one's own goals. Students mentioned getting rewards for achievement including an electric guitar and time at surf camp. They also mentioned avoiding embarrassment. Personal reasons for wanting to do well included:

> Knowing what I can do, aim for Excellence to get the highest possible mark
>
> No one wants to fail, inside you don't want to
>
> Deep down you want to do your best

Regarding what made them likely to do just enough, students indicated they would do this for subjects that did not interest them, when they were forced to do things they did not want or like, and in classes where they perceived that the teacher did not seem to care and made the information boring or not interesting even when students tried to do their best.

Results from the Year 11-13 Focus Groups

For the Year 11-13 students who were participating in their respective levels of NCEA, our questions focussed on their experiences with NCEA. The first questions asked what they liked best/least about NCEA. Next, they were asked whether they thought that NCEA motivates good study behaviour and achievement (and why) and what motivates them to do their best or to do just enough. Question 3 focussed on the record of learning, and the final question asked whether they believe that doing well on NCEA mattered (and why or why not).

What I like best/least about NCEA: Student responses ranged from generalities such as *"It's awesome"* to the more specific such as *"Can do internal assessments"* and *"no big exams at the end of the year."* Students generally believed NCEA was better than the old system, with endorsement of internal assessment throughout the year, being able to make more choices, and having opportunities to improve their performance. Typical comments follow:

> The assessment—Not Achieved, Achieved, Merit and Excellence and not just pass or fail—indicates room for improvement
>
> Can work throughout the year, not just focussed on an end of year exam
>
> Credits motivate people to really study, if you don't have enough credit you will study for exams
>
> I think it's good, the internals take pressure off the end of the year [several others agree]
>
> Good to have more subjects than CIE [the Cambridge system]

With reference to what students liked least about the NCEA, there were alternative comments about the disadvantages of having to work throughout the year because of internal assessments:

> No time for my life…no time for my family…It makes me tired…No time for rugby
>
> Not enough time for sleeping
>
> It's okay—still school, aye?
>
> I'm always studying it seems
>
> I haven't got time to hang with my mates…too much work
>
> Not enough time for other things like sport

Students were also concerned about specific aspects of the assessment and the grading/marking criteria. There were many comments about these issues:

> Marking criteria not clear, teachers had to explain criteria, difference is trivial between Merit and Achieved
>
> Annoying to do well in three aspects, but then fail if you get a Not Achieved for one part
>
> Got E, E, E then got Achieved because of missing one…mark lowered by just one result
>
> If doing Achievement standards, okay, but if unit standards, too easy, should have to do more
>
> There is the same recognition for Achieved as Merit and Excellence…lack of motivation to achieve Excellence
>
> I want a percentage as well as just Achieved, Merit, Excellence, did I <u>just</u> achieve or was I close to Merit?
>
> If I get credits, will not work at end of year, bad thing

Motivation Orientations for Achievement: Student responses to the remaining interview questions overlapped from question to question, reflecting different goal orientations and motivations for study and achievement. Hence, responses were analysed according to themes across questions rather than

separately for each question. The questions that stimulated these responses included whether they felt that NCEA motivated good study behaviour and achievement (and why or why not) and whether doing well on NCEA mattered to them (and, again, why or why not).

Students indicated they responded to a variety of goal orientations and motivators, including working for *extrinsic* goals such as meeting credit requirements for NCEA and attaining University Entrance. These comments suggest that the perceived *Utility* or *Importance* of a subject, task, achievement standards, or unit standards would have an influence on what they would do and how hard they would work. Typical comments included:

> Only if [I] need for university
>
> [If you] don't need something, you won't do it
>
> Get into university…can get into university or get a good job with good money
>
> Why try for Excellence if you can only get an Achieved and still achieve the same number of credits?
>
> If we do our best, we can get a good job and earn good money

A few comments, generally made by students from the high decile schools, indicated that some parents had promised their children tangible rewards for doing well. (This was also mentioned by Year 10 students who were enrolled early in NCEA Level 1):

> [I'll work for] money and bribes

Other student comments noted more motivators such as doing things they enjoy, are interested in, or because it was expected that they would do well. These kinds of reasons are generally regarded as indicators of more intrinsic motivation in comparison to the comment made above, including:

> [It's the] way you've been brought up, to try harder
>
> Teach kids to do the best you can, not just about doing a subject
>
> People do what they want to do and like to do
>
> Making us all do one way is not right because we all learn differently

Interestingly, responses from the students attending the *wharekura* in particular reflected a group consensus about doing one's best, demonstrating achievement, and meeting positive expectations of their families and teachers. Comments range across what might be labelled extrinsic and intrinsic goal orientations, but they were consistent in doing one's best rather than finding out the minimum required in order to reach a specific goal:

> Can see areas of strength and weakness and be able to work on it
>
> Our families want us to do well

> Teachers say we have to do well
>
> We wanna do our best, cause we don't want to be another statistic, we want to prove Pakeha wrong
>
> We all want to go to university…we want to be the lawyers, the teachers, accountants and doctors
>
> We want well-paying jobs
>
> Just because we are Māori doesn't mean we are the ones who don't want to achieve excellent grades

Across all the groups, students revealed different perspectives regarding whether parents and teachers were their primary sources of inspiration or whether the motivation to do well was more personal:

> The teacher expected me to get a mark, I don't want to disappoint the teacher or my parents
>
> Make the family proud
>
> The only thing that motivates us is one's own personal goals
>
> No system would motivate, motivation needs to be in yourself

Summary of Study 4 Findings

Across the focus groups with parents, teachers and students, certain patterns emerge and reinforce findings from previous research and other data sources (Meyer et al., 2006). Firstly, knowledge of major design features of NCEA continues to be juxtaposed with wide-ranging personal opinions about whether those same features are having a positive or negative impact on student learning and achievement. For example, there is widespread support for the incorporation of internal assessment alongside external assessment to measure student learning. The addition of internal assessment during the school year is seen as a positive change that requires students to become better at time-management and to work throughout the year to the benefit of their learning. Similarly, there is support for the variety of opportunities to select subjects and tasks meeting individual interests and needs. Students also seem to appreciate the opportunities for increased feedback about their work provided by NCEA at the same time as they have increased their expectations that they should receive this feedback and more information about how they are doing in school. In general, students seemed better informed about NCEA than those interviewed a year earlier.

There continue to be nagging concerns, expressed most strongly by parents and students and to a lesser extent by teachers, that more recognition needs to be given for doing well and that existing grading practices do not provide enough information for them about their learning.

The focus groups from schools with very different demographics have also allowed us to explore whether the NCEA qualification scheme is meeting

another of its stated goals, that is accommodating the learning needs of a more diverse student population. What is particularly interesting about the student interviews is that they do not support a two-tiered system, whereby an easier version of a qualification would be made available for those students seen as not capable of higher achievement. In contrast, parents from one school and even some of the teachers from more than one school did suggest that there were different kinds of students, with not all students being seen as capable of raising their levels of achievement. The students, particularly those from the *wharekura*, made it absolutely clear that they expected to meet high expectations and did not want any excuses made for them. As one student summed up:

> We never want to do just enough…we have high standards, awesome teachers who encourage us all the time.

Summary of Key Findings

In this section, we present key findings for influences of aspects of the NCEA on student motivation and achievement. We also provide a summary of areas of major agreement regarding perceptions about selected design features of NCEA including strengths and concerns relating to impact of educational practice on student study behaviour and achievement outcomes. The section ends with a summary of the key findings organised by the four studies described in more detail in previous sections of the report.

Influences on Subject Choice

- Longitudinal data support a relationship between why students choose subjects and their achievement. Students with higher achievement outcomes at follow-up had reported valuing subject selection based on *Interest* and the *Importance* or *Utility* of the subject for future career and study goals. Students with lower achievement outcomes at follow-up had reported *External* reasons for subject selection.

- Selecting subjects based on *Interest* was also related to attaining more achievement standards with Merit and with Excellence, and selecting subjects for *External* reasons was related to attaining fewer credits with Merit and Excellence as well as fewer total credits overall.

- Students emphasised the need for information about the relevance of their secondary study and subject content to future career and study goals so that they could make better choices and to enhance motivation to learn. They noted the importance of receiving ongoing information directly from subject area teachers as topics were addressed, and they expressed concerns that teachers did not link secondary study to valued outcomes in the real world as much as they would like.

- Students reported selecting subjects based on University Entrance requirements for tertiary study with less emphasis on the nature of future careers or work after school.

- The majority of comments from the interviews with a small, randomly selected group of 12 school leavers from the 2005 year 13 sample who had gone on to university study in 2006 indicated that their secondary subjects and choices had prepared them well. A few comments noted a lack of relevance between what they had done in secondary school and what they were now pursing at university.

- School leavers attending university at follow-up indicated that NCEA assessment of subject mastery by the assessment of achievement standards had been useful in some subjects but less so in others; problems occurred when students had not participated in the assessment of certain standards within a subject that proved to be critical prerequisites for tertiary study in that subject area.

- Only two of the 12 school leavers interviewed more than a year after enrolling at university made explicit comments regarding subject choice as a positive design feature of NCEA.

- Teachers in the focus groups made few comments relating student subject choices to the perceived importance and utility of those subjects for future goals such as University Entrance or employment. University Entrance was mentioned only once by a *wharekura* teacher, and only three other comments about future use were made by teachers all of whom were from high decile schools.

- Comments made by the parents in the one focus group at a high decile school focussed exclusively on subject choices based on interest and the nature of activities (e.g., boys preferring to do subjects with lots of hands-on project work) rather than discussing relevance of subjects to future career and study goals.

- Similarly, teachers mentioned student choices based on the temporal characteristics of learning activities in subjects rather than based on future career and study goals. Teachers emphasised that students did what they thought was fun and preferred activity-oriented work. In contrast, many student comments emphasised that, in their opinion, their teachers did not give them enough information about the relevance of subjects to future goals.

Influences of Part-Time Work on Motivation and Achievement

- In Year 10, 32% of students indicated they worked part-time. Nearly half (45%) of those with part-time jobs indicated they worked up to 5 hours weekly, 36% between 6-10 hours weekly, and 13% between 11-15 hours weekly. Of Year 10 students with part-time jobs, 6% indicated they worked more than 15 hours each week.

- The percentage of students who reported working part-time increased to 41% in Year 11. Students working part-time also worked more hours each week. Of students working part-time, 28% worked up to 5 hours, 36% worked between 6-10 hours, 23% worked between 11-15 hours weekly, and 13% worked over 15 hours weekly.

- In Year 10, males and females worked similar weekly hours. In Year 11, males and females also reported working similar hours with one exception: The number of males who reported working more than 15 hours weekly was significantly higher than females reporting this number of hours.

- At 53%, NZ European students revealed the highest proportion of those working part-time in Years 10-11. This was significantly different from part-time work by Asian, Māori, and Pasifika students with more than 70% of these groups reporting no part-time work. Of those students reporting working more than 15 hours weekly, Māori showed the highest percentage with 8% in comparison to NZ European students at 5%.

- Year 11 achievement data show that students who did not work part-time earned fewer NCEA credits overall than students who worked part-time, with the notable exception of students who worked over 15 hours per week who had the lowest number of total credits recorded.

- Students working up to 10 hours a week showed the most positive pattern of achievement. This group had fewer grades of Not Achieved on achievement standards attempted, the highest numbers of achievement standard credits, the highest number of achievement standards passed with Merit, and the highest number of achievement standards passed with Excellence.

- Students working between 11-15 hours weekly achieved more credits overall than those working fewer and those working more hours. They gained more achievement standard credits than those working more than 15 hours or those who did not work, and they gained more unit standard credits than any group other than those working over 15 hours per week. They also recorded the highest number of achievement standards as Achieved and were similar to those working up to 10 hours per week with respect to gaining achievement standards with Merit. However, students working between 11-15 hours weekly gained fewer achievement standards with Excellence than any other student group other than those working more than 15 hours per week.

- Year 11 students working up to 5 hours per week attained the highest number of achievement standard credits and recorded the lowest number of unit standard credits overall. They also showed the fewest recorded standards Not Attempted than all other students with part-time jobs or without a job.

- Year 11 students working for more than 15 hours weekly attained significantly more unit standard credits than those with no jobs. They received more grades of Not Achieved on achievement standards attempted in comparison to those without jobs or who worked up to 10 hours weekly. Students working more than 15 hours each week also recorded more standards Not Attempted than students without a job or working up to 5 hours weekly.

Relationship of Motivation and School Achievement

- The two motivation orientations *Doing My Best* and *Doing Just Enough* were those most strongly related to student achievement a year later. Our measures also showed that these student motivation orientations persisted from one year to the next, across Years 10-11. Correlations across time on the two measures of motivation and with achievement were highly significant.

- For students who were in Year 10 in 2005 and Year 11 in 2006, analyses of the relationship between the 2005 student survey factors for *Doing My Best* and *Doing Just Enough*, these same factors on the 2006 screening

tool, and recorded NCEA achievement outcomes in 2006 revealed significant relationships that support the predictive validity of the screening tool as an advance indicator of subsequent student achievement one year later.

- At follow-up, the *Doing My Best* orientation was a significant predictor of attaining more achievement standards with Merit and Excellence, more credits attained overall, and fewer Not Attempted standards on the Record of Learning. High scores on the *Doing My Best* orientation predicted fewer unit standard credits attained.

- At follow-up, the *Doing Just Enough* orientation was a significant predictor of lower achievement including fewer total credits attained overall, attaining fewer achievement standards with Merit and Excellence, and more Not Attempted standards on the Record of Learning. This orientation was also the strongest predictor of the number of unit standard credits attained.

- There continued to be significant but small differences for gender, ethnicity and school decile level on these two motivation orientations.

- Females scored higher on the *Doing My Best* and lower on the *Doing Just Enough* orientation in comparison to males, but these effects were quite small even if statistically significant given the large sample size.

- There was a significant main effect for ethnicity on the *Doing My Best* and *Doing Just Enough* factors, with Asian students showing the most positive orientations followed by European, Pasifika and Māori students. European and Asian students did not differ significantly from one another on the *Doing Just Enough* factor, and Pasifika and Māori students did not differ significantly from one another on the *Doing My Best* factor.

- Students from high decile schools scored lower than those at middle and low decile schools on the *Doing Just Enough* factor, and students from low decile schools scored lower than those from middle and high decile schools on the *Doing My Best* factor.

- Motivation orientation ratings for *Doing My Best* and *Doing Just Enough* on the screening tool were strong predictors of student achievement outcomes. This included the number of credits attained overall, the number of achievement standard credits attained, and the number of achievement credits attained with Merit and Excellence.

- Both for females and males, high scores on the *Doing My Best* and low scores on the *Doing Just Enough* were significant predictors of the number of achievement standard credits attained with Excellence, accounting for 24% and 19% of the variance, respectively.

- For European students, the number of achievement standard credits attained with Excellence was predicted by both high scores on *Doing My*

Best and low scores on *Doing Just Enough*, explaining 22% of the variance. For Māori students, both high scores on *Doing My Best* and low scores on *Doing Just Enough* were significant predictors of achievement standards with Excellence. For Asian and Pasifika students, the *Doing My Best* orientation was not significantly related but low scores on the *Doing Just Enough* orientation did significantly predict achievement standards with Excellence. For Asian students, these orientations explained 20% of the variance; for Pasifika students, they explained only 9% of the variance.

- Some parents and teachers categorised students as having either positive or negative achievement motivation orientations believed to be static or "the way students are," rather than as orientations that could be changed. Further research is needed to investigate attitudes such as these that could function as deficit theorising and have negative consequences for student learning.

- In contrast to higher decile schools, students and teachers at lower decile and the *wharekura* in our sample reported positive attributions and future goals for achievement, including the expectation that all students would *Do Their Best*. These findings were complemented by tributes from the students about their teachers, who were reported to be "awesome" and caring about their learning. These findings are also consistent with recent research by Bishop and Berryman emphasising the importance of relationships and of teachers taking responsibility for student learning.

Relationship of Attributions to Achievement

- Students rated the two internal causes of ability and effort more highly as reasons for their best marks on an English test or exam in comparison to their ratings of these internal causes as attributions for their worst mark. They rated task difficulty as an external cause contributing to their worst mark. Contrary to the usual pattern, the students in our sample did not see bad luck as responsible for poor performance. They did rate good luck higher as a reason for good performance.

- Consistent with usual patterns regarding gender and attributions, females attributed their best marks to effort more than males and were also more likely to attribute their worst mark to a lack of ability.

- Māori students are less likely than European, Asian and Pasifika students to attribute positive and negative achievement outcomes to internal causes of ability and effort, over which they have some control. Māori students, however, were no more likely than other students to attribute their marks to luck.

- Generally, attributions for best and worst marks were not highly correlated. The exception was a strong correlation between attributions of both best and worst marks to good and bad luck, respectively.

- Students who attributed their best marks to ability and effort were more likely to exhibit a higher *Doing My Best* orientation and less likely to exhibit a *Doing Just Enough* orientation. Students who attributed best marks to luck were slightly less likely to score highly for *Doing My Best* but instead showed a *Doing Just Enough* orientation.

- Attributing one's best marks to the internal factors of ability and effort was associated with attaining more achievement standard credits overall, more achievement credits with Merit and Excellence, and fewer total unit standard credits.

- Attributing one's best marks to task difficulty was unrelated to achievement. Attributing one's best marks to good luck was associated with gaining slightly more unit standard credits, fewer achievement standard credits, and fewer achievement standard credits with Merit and Excellence.

- Student attributions of best marks to ability and worst mark to task difficulty (a pattern corresponding to a self-serving bias that protects self-esteem) were significantly related to the number of achievement standards gained with Excellence.

- Student attributions of their worst mark to a lack of ability (an attribution pattern that weakens motivation) attained more grades of Achieved rather than with Merit or Excellence. Consistent with this finding is that Achieved grades were also predicted by the *Doing Just Enough* motivation orientation and showed no relationship to the *Doing My Best* orientation.

Qualifications Design Issues

- Parents, teachers and students across our data sources continued to raise issues regarding grading practices, recognition of high achievement, the number of grade bands, and the nature of feedback to students on their learning. The announced, additional endorsements of the certificate and for individual subjects for Merit and Excellence are likely to address most of these concerns, but there is scope for continuing to monitor the nature and extent of feedback to students on their learning and performance.

- Parents, teachers and students—across our data sources—continued to query equivalence of achievement standards and unit standards for the attainment of the NCEA. Further, the relationship of what are considered to be less motivating orientations to learning and external attributions for performance with the attainment of unit standards and fewer achievement standards suggests that there is risk of NCEA being seen as a two-tiered system, with unit standards seen as pathways for "low achievers." The announced review of unit standards provides an opportunity to examine this issue in more depth.

- Parents, teachers and students—across our data sources—queried criteria for passing achievement standards with grades of Achieved, Merit and

Excellence and raised questions regarding consistency of grading on internal assessments across schools and subjects. The announced increased level of moderation of internal assessments across schools by NZQA moderators independent of the schools and the MOE could alleviate such concerns.

- Students indicate that subject choices available to them under NCEA need to be underpinned by authoritative information about the usefulness and importance of subjects as well as content within those subjects (which may align with particular assessment credits) for their future career and study plans. They were particularly interested in getting this information throughout their secondary study directly from teachers, whom they largely saw as relatively uninformed about how subject matter related to use in the future and the real world.

- Many if not most senior secondary students were motivated by extrinsic factors such as attaining University Entrance, but saw the standard for UE as relatively easy to attain. Focus group data seems to support increased standards and rigour matching what they saw as the demands of university study. Announced changes to NCEA with endorsement of the certificate and endorsement of subjects for Merit and Excellence as well as the recording of grades of Not Achieved could create the potential for the sectors to work collaboratively on a future model of University Entrance and selection into tertiary programmes that demonstrates high standards without compromising transparency and equity of access for students.

- There was consistent high praise for internal assessment in combination with external assessment, including strong support from school leavers now attending university. These graduates reported their perceptions that the NCEA system of internal assessment had prepared them with the study habits and assessment experiences suited to the similar balance of internal and external assessment at university.

Understandings about NCEA

- Students interviewed in focus groups late in Year 10 understood major features of the NCEA. This included knowledge that it was a national qualification with three levels; that there were subject, literacy and numeracy requirements for University Entrance; that they could attain four different grades of Achieved, Not Achieved, Merit and Excellence for achievement standard and Achieved or Not Achieved only for most unit standard credits; and that most subjects used both internal and external assessments.

- Students in the Year 10 focus groups indicated that teachers and other sources at school had provided them with what they knew about NCEA through posters, booklets, and letters sent home. Students also reported learning and forming opinions regarding what they thought they would like or not like about the NCEA based on what older siblings and friends who had experienced NCEA had told them.

- There was an awareness by students in the focus groups in both Years 10 and Years 11-13 of primarily negative media coverage of NCEA, but little discussion overall on this issue. At one high decile secondary school, a large group of Year 10 students were emphatic as a group that their comments not be interpreted as primarily negative since they felt that the NCEA had many positive features.

- Students at secondary level and school leavers at tertiary level emphasised the value of internal assessment. They also expressed concern about whether excellence was recognised sufficiently, and they felt that current grading practices provided inadequate feedback and recognition. Secondary students preferred a model incorporating internal assessments throughout the year, although some complained that this interfered with other activities including their social lives. Tertiary students reported that the internal assessment component of the NCEA had prepared them well for university assessment practices.

- Students at secondary school were convinced, as had been expressed in the previous year, that there continued to be anomalies in grading criteria and practices such that it was possible to pass at the level of Merit and Excellence and yet get only Achieved because of missing a question at a lower level.

Overall Key Findings

The longitudinal findings in Study 1 are consistent with the cross-sectional findings in our previous report (Meyer et al., 2006). Those students who attained higher achievement outcomes for 2006 had in the previous year based their subject choices on interest, the importance of the subject and its utility for future career goals. They were also more motivated to do their best and get recognition. Those students whose achievement outcomes for 2006 were lower had in the previous year based their subject choices on external factors and were motivated by doing just enough and work avoidance. These findings suggest that students' attitudes to subject choice and motivation show persistent long-term relationships with achievement.

The sample in Study 2 is small and not representative, but it does show that students with positive motivations as Year 13 students in 2005 are mostly at University and advancing their education in 2006 and 2007. These students also stress that the internal assessment aspects of NCEA prepared them well for university assessment practices.

Study 3 shows that a brief screening tool for student motivation not only correlates with the longer motivation survey developed by Meyer et al. (2006), but has high reliability and generates highly predictive results. The findings show that even with this short 8-item measure of motivation, the two motives of *Doing My Best* and *Doing Just Enough* are strong predictors of student achievement in NCEA, with *Doing My Best* predicting positive outcomes and *Doing Just Enough* predicting relatively negative performance. Aspects of our

findings also support the development of an additional subscale to measure social and "belongingness" dimensions of motivation.
Further, our results show that these motivations relate to students' attributions for their performance in an English exam or test. Students who report *Doing My Best* attributed their best result to their own efforts and ability and discounted luck, whereas students motivated to *Do Just Enough* discounted the role of effort and ability and attribute their best result to luck. Students' attributions for their own results also had a direct relation to their actual grades in NCEA. Students who attributed their results to their own effort and ability gained more Merit and Excellence grades, whereas the reverse pattern is shown for students who obtained more unit standard credits and Achieved level grades. These findings show that students' perceptions of their own motivations and the causes of their success and failure are interconnected and relate to their actual outcomes. This short measure thus shows strong potential as a screening measure for students in order to tap those motivations and attitudes that hamper performance.

Study 3 also revealed that students engaged in moderate amounts of part-time work (1-10 hours per week) show a higher level of achievement than students doing no part-time work or students doing more than 10 hours part-time work per week.

Study 4 largely replicates the findings from our 2006 research report. There was widespread support for the internal assessment components of NCEA combined with external assessment, accompanied by suggestions regarding how to improve grading and feedback to students as well as the recognition of excellence. There was also support for subject choice and being able to choose standards. These findings can be juxtaposed with those from the graduate follow-up. School leavers similarly valued internal assessment but also raised the issues of ensuring that choice did not mean missing out critical subject knowledge needed for future endeavours such as university study.

Parents, teachers and students alike indicated that students selected subjects based on interest and the nature of the activities during instruction. Students additionally emphasised that better linkages between subjects and activities to future career and study goals—utility/importance issues—needed to be made directly by their teachers. There was a tendency for the parents and the teachers from higher decile schools to categorise students as either highly motivated or poorly motivated, rather than seeing motivation as a dynamic orientation that can be changed. Teachers and students from low decile schools and *wharekura* expressed a different perspective, seeing achievement as accessible to all students and motivation as a factor affected by the teaching and learning process. Nevertheless, pathways from school to the future beyond NCEA were not clearly articulated by any group other than the non-specific goal of attaining University Entrance. How the NCEA could be tailored and utilised to plan for future careers and possibilities other than attending tertiary were not raised.

Future Research and Development Issues

A common feature of the English-language literature on motivation is its emphasis upon what might be referred to as primarily Western perspectives of individualism and autonomy. These perspectives view learning as a product of educational opportunities but are also dependent upon individual learner characteristics, including ability, motivation orientation, effort, and interest in particular subjects and tasks. Schools and teachers are encouraged to develop instructional and remedial strategies that promote academic mastery; to better engage students in interesting tasks and activities; to link learning in the classroom to future career and study goals in order to enhance motivation; and provide better feedback to students on their academic performance so that they have guidance for future learning.

Curricula and assessments—such as the New Zealand Curriculum Framework, the NCEA, and the National Qualifications Framework—are similarly designed to maximize student interest, engagement, and understandings of how school study is relevant to future goals. An example is the NCEA's incorporation of more student choice in selecting subjects and even specific assessment tasks at senior secondary school reflecting adolescents' preferences for greater self-determination and autonomy. The students in our sample clearly appreciated these choices, but it is interesting that they also emphasised that the choices are dependent upon their having good information. Hence, students wanted their teachers to be able to tell them how a particular activity and specific subject was in fact relevant to their future. This suggests that teachers cannot depend on careers advisers in schools to make this link for students but must directly inform students about these linkages, perhaps through collaboration with the school careers staff rather than attempting to become experts themselves.

Our findings for attributions to ability, effort and examination ease/difficulty on the motivation screening tool are consistent with a self-serving or self preservation bias, a pattern said to be common in Western cultures whereby people take credit for their success but emphasise external causes for failure. This pattern is adaptive in boosting self-esteem, which is preserved when people attribute their success to themselves and their failure to external parties. However, the pattern is not adaptive overall for motivation and learning: When people attribute their failures to external causes, they are invoking factors over which they have little control and thus excuse themselves from responsibility to do better next time. Interestingly, both the person's individual ability and the difficulty of the task or examination are usually considered to be stable causes, less easy to change than the person's effort (and luck, which is of course thought to be variable by most people). This also affects achievement, because those who attribute their success and failure to stable causes that cannot be changed will have little motivation, again, to exert more effort in future tasks and opportunities.

Other research with New Zealand Maori students suggests that effective teaching fosters agentic thinking in students and counteracts deficit thinking

(Bishop et al., 2007). These findings may apply to students in other ethnic groups as well. The attributional model of helplessness suggests that deficit thinking is likely to relate to teachers and students attributing 'failure' or low achievement to a lack of ability, whereas agentic thinking is likely to relate to teachers and students attributing different levels of achievement to a lack of effort. There is a need for research to establish the link between these concepts to provide a coherent and parsimonious understanding of student performance.

Our earlier research and the findings in this report support strong relationships between student motivation orientations and their achievement in school as measured by the NCEA (Meyer et al., 2006). Longitudinal research has now extended these findings to document significant relationships between student achievement in 2006 and their self-ratings a year earlier, in 2005, on the orientation to learning factor; these items have been incorporated into our Motivation Orientation screening tool and research carried out over the next two years will validate further the predictive validity of the measure. A simple, short screening tool such as ours—easy to administer and score—could be used as part of the development and evaluation of positive interventions to enhance student motivation orientations and achievement. Our initial research supports the predictive validity of the tool, but further development will assess value-added by incorporating an additional social dimension that may be even more predictive of achievement for more collectivist cultures.

We found it interesting that the many scales and measures designed to assess student attitudes and motivations towards learning focus almost exclusively on questions regarding how the individual student views tasks, subjects and teaching activities. There is far less consideration given to the classroom as a social context and learning as a social interaction. Interestingly, social factors such as classroom climate, group belongingness, social inclusion, and cooperation in group learning contexts are discussed in the literature (Ames, 1992; Church, Elliot, & Gable, 2001; Slavin, 1983; Wentzel, 1989). Social context is critical in Vygotsky's theory of child development (Vygotsky, 1978), and researchers have demonstrated that social interaction in classrooms can be structured to enhance situational interest and, consequently, learning (Hidi & Harackiewicz, 2000). Nevertheless, a search through recent work in this area reveals that individualistic motivation orientation and goal theory predominate (Elliott & Dweck, 2005). Urdan and Maehr (1995) are among the few who have called for movement beyond the two-goal or the more recent two by two goal of motivation and achievement to include social goals. Most motivation theory and research continues to be relatively monocultural and individualistic in perspective rather than reflecting the kinds of social motivation goals that might be valued in more collectivist cultures (Boekaerts & Martens, 2007; Hui & Triandis, 1986; Li, 2006).

Recent research in New Zealand reflects the importance of incorporating teaching and learning strategies that build on cultural capital, group belongingness in the classroom, and positive social relationships between the teacher and students as well as among students (Bishop & Berryman, 2006;

Bishop, Berryman, Cavanagh, & Teddy, 2007). Our research has revealed various significant relationships across dimensions of motivation orientation, self-efficacy and attitudes towards learning and achievement. These patterns are strongest for New Zealand European students and Asian students (primarily New Zealanders rather than international students). The positive achievement results emerging from the *Te Kotahitanga* project (Bishop et al., 2007) support the need for further research into additional, social motivation factors that relate to and predict achievement by Māori and Pasifika students as well as students from other cultural groups (Urdan & Maehr, 1995). Traditional learning theory has described a similar *Social Goals* dimension (Ames, 1992; Wentzel & Caldwell, 1997).

A measure of *Relationships and Group Belongingness* could be incorporated into future research to capture the impact of positive relationships with teachers and across students on achievement for New Zealand's diverse student population. Further research is needed on these relationships between student perceptions of the social dimensions of learning and schooling and student achievement outcomes in order to inform the design of interventions intended to enhance school achievement by all students.

The recently announced design changes, including plans to award NCEA certificates with endorsements from 2007 and to also endorse subjects for different performance levels from 2008, would probably meet with the approval of our focus group participants. Such changes could be expected to alleviate many of the concerns expressed to us by these parents, teachers and students. It would be important to assess perceptions and academic performance over at least the next two years—the time period proposed for the changes to take full effect—to determine whether the changes that have been proposed are having the intended impact on student study behaviour and achievement.

Based on our findings from 2006 and 2007, future research priorities include:

- Validation of the Screening Tool: The predictive validity of the screening tool will be investigated for 2006 Year 10 students in relationship to their 2007 Year 11 attainment on NCEA.

- Validation of a Relationships Sub-Scale: An additional sub-scale to measure student perceptions of relationships in the classroom (with the teacher and with other students) will be validated with a pilot sample of students. The subscale will be incorporated into a revised screening tool that incorporates this additional dimension with a new sample of Year 10 and Year 11 students. Such a dimension is supported by our own research as well as that carried out by Bishop and his colleagues (Bishop, Berryman, Cavanagh, & Teddy, 2007).

- Extension of the relation of achievement attributions to achievement: The attribution measure will be extended with regard to three considerations: first, assess students' attributions for achievement that are not restricted with reference to only the subject of English; second, assess attributions to the teacher's role and relationships with other students; third, examine

whether attributing failure to a lack of ability relates to deficit thinking and attributing outcomes to effort relates to agentic thinking (*cf* Bishop et al., 2007).

- Further Investigation of the Impact of Out-of-School Activities: Our screening tool will survey hours worked part-time and also hours spent in other activities such as family responsibilities (e.g., taking care of younger siblings) and extracurricular activities (e.g., sport).

- Perceptions of Changes in Qualifications Design: Parent, student and teacher focus groups will be interviewed about their perceptions of the NCEA qualifications design changes announced for 2007 and 2008.

- Investigation of Teacher Attitudes towards Student Motivation: A teacher survey will investigate teacher attitudes towards student motivation orientations, whether teachers believe that student motivation orientations can be changed, what teachers know about how to motivate student learning, and what strategies could be do-able to support teachers in enhancing student motivation orientations to learning.

- Pilot Investigations of Interventions to Enhance Student Motivation: Pilot intervention research should be undertaken into do-able strategies that teachers can apply in the classroom and in the context of subject-related learning and assessment tasks. One measure of the effectiveness of different intervention approaches would be pre-post orientation scores on the screening tool for experimental and comparison groups of year 10 and year 11 students.

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Appendices

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Appendix A:

Glossary of Key Terms

Appendix A: Glossary of Key Terms

Achievement Motivation	Cognitive dispositions or attribution judgements affecting one's approach to learning tasks and achievement goals.
Achievement Standards	Statements of learning outcomes describing topics, skills and understandings of academic secondary school subjects and which carry credits towards attaining Levels of NCEA.
AME	AME is the acronym sometimes seen to refer to the NCEA grade range for achievement standards passed as A for Achieved, M for Merit and E for Excellence.
Assessment	A measurement of student learning, occurring at the level of separate Unit or Achievement Standards within subjects under NCEA.
External Assessment	End of the school year measures of student learning that are formal and invigilated, generally by examination or submission of a portfolio appropriate to the subject area.
Internal Assessment	Ongoing assessments or assignments administered and marked at the school level by teachers within subjects.
NCEA	The acronym for New Zealand's National Certificate of Educational Achievement, a national qualification comprising three levels 1-3 available to students in the senior secondary school generally in years 11-13. NCEA is standards-based and provides pathways to tertiary education and workplace training; the qualification is recognised for university entrance in New Zealand and Australia as well as internationally for through inclusion in the publication *International Qualifications for Entry into Higher Education* used by the UK and other countries for tertiary entrance and selection.

Qualifications Design	Aspects and requirements of NCEA relating to the accumulation of credits; how standards are assessed; options for subject and credits from either unit standards or achievement standards; features of internal assessment and external examinations or portfolio assessments; and the award of grades including Not Achieved, Achieved, Merit and Excellence as well as the designation of Standard Not Attempted.
Record of Learning	A personalised list of all credits gained by an individual students from achieving standards including information on level performance such as Achieved, Not Achieved, Merit, Excellence and Standard Not Attempted (SNA).
Student Choice	Decisions that students make about their education and that can be affected by judgments of interest, utility/importance and/or external factors. Under NCEA, these include which elective subjects to take beyond requirements; the selection of standards for being assessed; making decisions regarding whether to attempt Merit or Excellence; re-sitting and/or re-submitting internal assessments and assignments; and enrolling in credits across levels and years in school.
Student Enjoyment	Learning affected by and subjects selected based on personal interest in a subject or topic as distinct from factors such as future career prospects, advice from others, or peripheral factors such as following choices made by one's friends.
Student Learning Outcomes	What students know, understand, and/or can do for subjects or topics. In NCEA, student learning is assessed against standards, and results are recorded on the individual Record of Learning for each Level and across the senior secondary school years.
Unit Standards	Statements of learning outcomes describing topics, skills and understandings of a secondary school subject and which carry credits towards attaining Levels of NCEA. Most unit standards were originally designed for vocational subjects.

Appendix B:

Year 10 Student Survey (2005)

Appendix B: Year 10 Student Survey (2005)

YOUR NAME: ……

YOUR STUDENT NUMBER (NSN): ……

TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MĀUI

VICTORIA
UNIVERSITY OF WELLINGTON

NCEA Survey of Year 10 Students

2005

VICTORIA UNIVERSITY OF WELLINGTON COLLEGE OF EDUCATION
TE WHĀNAU O AKO PAI KI TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MAUI

Section 1: Descriptive Information

1. Name of school

   _____

2. Your student number (NSN)

   _____

3. Gender *(Please tick)*

Male	☐
Female	☐

4. Student status *(Please tick)*

Domestic NZ/permanent resident	☐
International	☐

5. Year in school *(Please tick)*

Year 10	☐
Year 11	☐
Year 12	☐
Year 13	☐

6. Do you have a part-time job? *(Please tick)*

Yes	☐
No	☐

Section 2: **We are interested in what or who will influence your decisions when you select subjects for Year 11.**

Please rate each of the following possible influences using this scale: (Please circle the number closest to your opinion)

1 = this does not matter to me at all
2 = this has little influence on my decisions
3 = this has some influence on my decisions
4 = this is a big factor in making decisions

		Doesn't matter	Little influence	Some influence	Big factor
7.	The subject is easy	1	2	3	4
8.	I'm interested in the subject	1	2	3	4
9.	I'm very good at the subject	1	2	3	4
10.	The assessment will include opportunities for Merit and Excellence and not just Achieved	1	2	3	4
11.	The subject gets me the number of credits I need	1	2	3	4
12.	I enjoy the subject	1	2	3	4
13.	My friends will be taking it	1	2	3	4
14.	My family/whānau want me to take it	1	2	3	4
15.	It's suggested by the Dean or Careers Adviser at school	1	2	3	4
16.	A teacher influences me to take it	1	2	3	4
17.	It fits my timetable	1	2	3	4
18.	It is related to what I might study at tertiary in future	1	2	3	4
19.	It is related to a future job or career goal	1	2	3	4
20.	I like the teacher who teaches the subject	1	2	3	4
21.	Because the subject is assessed by assignments and not final exams	1	2	3	4
22.	I need it for University Entrance	1	2	3	4

Section 3: **We are interested in how students think about their school learning**

Please rate each sentence listed below using this scale (Please circle the number closest to your opinion):

1 = this is not at all like me
2 = this is sometimes like me and sometimes not like me
3 = this is mostly like me
4 = this is definitely like me

		Not me	Sometimes me	Mostly me	Definitely me
23.	I need to be encouraged to work in school as I sometimes have other priorities	1	2	3	4
24.	I think my school work is important for my future goals in life	1	2	3	4
25.	I don't think school really matters in the long term	1	2	3	4
26.	My teachers think that I work hard and try to do my best	1	2	3	4
27.	My teachers think that I'm a strong student academically	1	2	3	4
28.	I expect to get Excellence or at least Merit when I do NCEA	1	2	3	4
29.	For me, getting Achieved will be good enough	1	2	3	4
30.	I love to study in school for learning's sake	1	2	3	4
31.	It will bother me if I get a Not Achieved	1	2	3	4
32.	My family/whānau expects me to get all three levels of NCEA, 1, 2, and 3	1	2	3	4
33.	If I get just NCEA Level 1 or possibly NCEA Level 2 before I leave school, I'll be satisfied and have no plans to finish Level 3	1	2	3	4

		Not me	Sometimes me	Mostly me	Definitely me
34.	I'll do just what I have to do in order to get University Entrance	1	2	3	4
35.	I will strive for Merit or Excellence even when I don't need this to achieve my goals	1	2	3	4
36.	I will work for the number of credits I need at each level, no more	1	2	3	4
37.	I want credits from school that lead to a good job or career	1	2	3	4
38.	What my friends think influences whether I work in school	1	2	3	4
39.	I prefer credits that point to life skills and vocational job-related skills to those that are just academic or leading to further study	1	2	3	4
40.	I want to take credits that allow me to try for Merit or Excellence, rather than just Achieved	1	2	3	4
41.	Once I have my 80 credits, I'll be satisfied	1	2	3	4
42.	I aim at getting a good education, not just completing tasks to get credits in NCEA	1	2	3	4
43.	The subject would interfere with part-time work commitments	1	2	3	4

Section 4: What do you think you will most probably do when you leave secondary school with NCEA?

44. Which levels of NCEA do you plan to finish before you leave school? (*Please tick all that apply)*

NCEA Level 1	
NCEA Level 2	
NCEA Level 3	

45. When you leave school, what are you most likely going to do? *Pick up to three things on the list below with:*

1 = first choice
2 = second choice
3 = third choice

	Choice
Go to university	
Attend another tertiary education programme like a polytechnic or wananga	
Enrol in a vocational programme to prepare me for work	
Work full time	
Work part time while I decide what to do	
Travel, maybe overseas	
Get married and/or start a family	
Just hang out while I decide what to do	
Go overseas for a while, then do a tertiary degree here in New Zealand	
Go overseas to work indefinitely	
Go overseas for tertiary study	
Do professional sports full time	
Other	

Section 5: What do you like or not like about NCEA and other approaches to assessment?

Please rate using the following scale:

1 = not important
2 = sometimes important
3 = important
4 = very important

		Not important	Somewhat important	Important	Very important
46.	Being able to relax after I get my 80 credits	1	2	3	4
47.	Having the opportunity to get credit for things as I go along	1	2	3	4
48.	Being able to get credit for the parts I know rather than just being tested on whole subjects	1	2	3	4
49.	Getting feedback on my work	1	2	3	4
50.	Spending time working on NCEA assessments	1	2	3	4
51.	Taking subjects where the teacher assesses my work during the course rather than only through a final exam	1	2	3	4
52.	Having a final end-of-course external exam with a grade scaled so I can compare myself with others	1	2	3	4
53.	Being able to study different subjects at different levels of NCEA during a particular year (for example, taking one Level 2 subject in Year 11 along with my Level 1 subjects)	1	2	3	4

	Not important	Somewhat important	Important	Very important
54. Being able to pick up achievement standards from an earlier level later on (for example, waiting to get Level 1 Numeracy credits in Year 12 along with my Level 2 subjects)	1	2	3	4
55. Not having to do parts of a course that I don't like when I don't need those credits	1	2	3	4
56. Being able to choose <u>which</u> parts of the course I want to study	1	2	3	4
57. Not having to pass more than 80 credits to get my NCEA	1	2	3	4
58. Being able to seek more than the minimum credits whenever I wish	1	2	3	4
59. I would like more detail about my marks, not just Achieved/ Not Achieved, Merit and Excellence	1	2	3	4

Section 6: What do you think you will like/dislike about the NCEA (and the record of learning)?

60. Name up to **three** things you think you will like about the NCEA and the record of learning?

    (i)

    (ii)

    (iii)

61. Name up to **three** things you think you will not like about the NCEA and the record of learning?

Thanks heaps for doing this survey. We appreciate it.

Appendix C:

Year 11-13 Student Survey (2005)

Appendix C: Year 11-13 Student Survey (2005)

YOUR NAME: ……

YOUR STUDENT NUMBER (NSN): ……

TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MĀUI

VICTORIA
UNIVERSITY OF WELLINGTON

NCEA Survey of Students

2005

VICTORIA UNIVERSITY OF WELLINGTON COLLEGE OF EDUCATION
TE WHĀNAU O AKO PAI KI TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MAUI

Section 1: Descriptive Information

1. Name of school

   _____

2. Your student number (NSN)

   _____

3. Gender *(Please tick)*

Male	☐
Female	☐

4. Student status *(Please tick)*

Domestic NZ/PR	☐
International	☐

5. Year in school *(Please tick)*

Year 10	☐
Year 11	☐
Year 12	☐
Year 13	☐

6. Do you have a part-time job? *(Please tick)*

Yes	☐
No	☐

Section 2: **We are interested in what or who influences your decisions when you select subjects**.
Please rate each of the following possible influences using this scale: (Please circle the number closest to your opinion)

1 = this does not matter to me at all
2 = this has little influence on my decisions
3 = this has some influence on my decisions
4 = this is a big factor in making decisions

		Doesn't matter	Little influence	Some influence	Big factor
7.	The subject is easy	1	2	3	4
8.	I'm interested in the subject	1	2	3	4
9.	I'm very good at the subject	1	2	3	4
10.	The assessment included opportunities for Merit and Excellence and not just Achieved	1	2	3	4
11.	The subject gets me the number of credits I need	1	2	3	4
12.	I enjoy the subject	1	2	3	4
13.	My friends are taking it	1	2	3	4
14.	My family/whānau wanted me to take it	1	2	3	4
15.	It was suggested to me by the Dean or Careers Adviser at school	1	2	3	4
16.	A teacher influenced me to take it	1	2	3	4
17.	It fitted my timetable	1	2	3	4
18.	It is related to what I will study at tertiary in future	1	2	3	4
19.	It is related to a future job or career goal	1	2	3	4
20.	I like the teacher who teaches the subject	1	2	3	4
21.	Because the subject is assessed by assignments and not final exams	1	2	3	4
22.	I need it for University Entrance	1	2	3	4

Section 3: **We are interested in how students think about their school learning**

Please rate each sentence listed below using this scale (Please circle the number closest to your opinion):

1 = this is not at all like me
2 = this is sometimes like me and sometimes not like me
3 = this is mostly like me
4 = this is definitely like me

		Not me	Sometimes me	Mostly me	Definitely me
23.	I need to be encouraged to work in school as I sometimes have other priorities	1	2	3	4
24.	I think my school work is important for my future goals in life	1	2	3	4
25.	I don't think school really matters in the long term	1	2	3	4
26.	My teachers think that I work hard and try to do my best	1	2	3	4
27.	My teachers think that I'm a strong student academically	1	2	3	4
28.	I expect to get Excellence or at least Merit when I try	1	2	3	4
29.	For me, getting Achieved is good enough	1	2	3	4
30.	I love to study in school for learning's sake	1	2	3	4
31.	It bothers me if I get a Not Achieved	1	2	3	4
32.	My family/whānau expects me to get all three levels of NCEA, 1, 2, and 3	1	2	3	4
33.	If I get just NCEA Level 1 or possibly NCEA Level 2 before I leave school, I'll be satisfied and have no plans to finish Level 3	1	2	3	4
34.	I'll do just what I have to do in order to get University Entrance	1	2	3	4

		Not me	Sometimes me	Mostly me	Definitely me
35.	I strive for Merit or Excellence even when I don't need this to achieve my goals	1	2	3	4
36.	I work for the number of credits I need at each level, no more	1	2	3	4
37.	I want credits from school that lead to a good job or career	1	2	3	4
38.	What my friends think influences whether I work in school	1	2	3	4
39.	I prefer credits that point to life skills and vocational job-related skills to those that are just academic or leading to further study	1	2	3	4
40.	I want to take credits that allow me to try for Merit or Excellence, rather than just Achieved	1	2	3	4
41.	Once I've got my 80 credits, I'm satisfied	1	2	3	4
42.	I aim at getting a good education, not just completing tasks to get credits	1	2	3	4
43.	The subject interferes with part-time work commitments	1	2	3	4

Section 4: What do you think you will most probably do when you leave secondary school with NCEA?

44. Which levels of NCEA do you plan to finish before you leave school? (*Please tick all that apply)*

NCEA Level 1	
NCEA Level 2	
NCEA Level 3	

45. When you leave school, what are you most likely going to do? *Pick up to three things on the list below with:*

1 = first choice
2 = second choice
3 = third choice

	Choice
Go to university	
Attend another tertiary education programme like a polytechnic or wananga	
Enrol in a vocational programme to prepare me for work	
Work full time	
Work part time while I decide what to do	
Travel, maybe overseas	
Get married and/or start a family	
Just hang out while I decide what to do	
Go overseas for a while, then do a tertiary degree here in New Zealand	
Go overseas to work indefinitely	
Go overseas for tertiary study	
Do professional sports full time	
Other	

Section 5: **What do you like or not like about NCEA and other approaches to assessment?**
Please rate using the following scale:

1 = not important
2 = sometimes important
3 = important
4 = very important

	Not important	Somewhat important	Important	Very important
46. Being able to relax after I get my 80 credits	1	2	3	4
47. Having the opportunity to get credit for things as I go along	1	2	3	4
48. Being able to get credit for the parts I know rather than just being tested on whole subjects	1	2	3	4
49. Getting feedback on my work	1	2	3	4
50. Spending time working on NCEA assessments	1	2	3	4
51. Taking subjects where the teacher assesses my work during the course rather than only through a final exam	1	2	3	4
52. Having a final end-of-course external exam with a grade scaled so I can compare myself with others	1	2	3	4
53. Being able to study different subjects at different levels of NCEA during a particular year (for example, taking one Level 3 subject in Year 12 along with my Level 2 subjects)	1	2	3	4
54. Being able to pick up achievement standards from an earlier level later on (for example, getting Level 1 Numeracy credits in Year 12 along with my Level 2 subjects)	1	2	3	4

	Not important	Somewhat important	Important	Very important
55. Not having to do parts of a course that I don't like when I don't need those credits	1	2	3	4
56. Being able to choose <u>which</u> parts of the course I want to study	1	2	3	4
57. Not having to pass more than 80 credits to get my NCEA	1	2	3	4
58. Being able to seek more than the minimum credits whenever I wish	1	2	3	4
59. I would like more detail about my marks, not just Achieved/ Not Achieved, Merit and Excellence	1	2	3	4

Section 6: What do you like/dislike about the NCEA (and the record of learning)?

60. Name up to **three** things you like about the NCEA and the record of learning?

    (iv)

    (v)

    (vi)

61. Name up to **three** things you do not like about the NCEA and the record of learning?

Thanks heaps for doing this survey. We appreciate it.

Appendix D:
Year 10-11 Screening Tool
(2006)

Appendix D: Year 10 Screening Tool (2006)

YOUR NAME: ……

YOUR STUDENT NUMBER (NSN): ……

TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MĀUI

VICTORIA
UNIVERSITY OF WELLINGTON

Survey of NCEA Goals

Year 10 & Year 11 Students

2006

VICTORIA UNIVERSITY OF WELLINGTON COLLEGE OF EDUCATION
TE WHĀNAU O AKO PAI KI TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MAUI

Section 1: Descriptive Information

1. Name of School .....

2. Your student number (NSN) .....

3. Gender *(Please tick)*
   - Male ☐
   - Female ☐

4. Student Status *(Please tick)*
   - Domestic NZ/permanent resident ☐
   - International ☐

5. Year in school *(Please tick)*
   - Year 10 ☐
   - Year 11 ☐

6. Do you have a part-time job? *(Please tick)*
   - Yes ☐
   - No ☐

   If you answered yes to Question 6, how many hours per week do you usually work? *(Please tick)*
   - 5 hours or less ☐
   - 6-10 hours ☐
   - 11-15 hours ☐
   - More than 15 hours ☐

7. Which levels of NCEA do you expect to complete? *(Please tick all levels you expect to complete)*
   - Level 1 ☐
   - Level 2 ☐
   - Level 3 ☐

Section 2: **We are interested in how students think about their school learning**

Please rate each sentence listed below using this scale and circle the number closest to your opinion:
1 = this is not at all like me
2 = this is sometimes like me and sometimes not like me
3 = this is mostly like me
4 = this is definitely like me

		Not me	Sometimes me	Mostly me	Definitely me
8.	I expect to get Excellence or at least Merit when I do NCEA	1	2	3	4
9.	If I get just NCEA Level 1 or possibly NCEA Level 2 before I leave school, I'll be satisfied and have no plans to finish Level 3	1	2	3	4
10.	I will strive for Merit or Excellence even when I don't need this to achieve my goals	1	2	3	4
11.	I will work for the number of credits I need at each level, no more	1	2	3	4
12.	I prefer credits that point to life skills and vocational job-related skills to those that are just academic or leading to further study	1	2	3	4
13.	I want to take credits that allow me to try for Merit or Excellence, rather than just Achieved	1	2	3	4
14.	Once I have my 80 credits, I'll be satisfied	1	2	3	4
15.	I aim at getting a good education, not just completing tasks to get credits in NCEA	1	2	3	4
16.	I prefer to do unit standards rather than achievement standards	1	2	3	4

Section 3: **What do you think might account for your successes and failures in school?**

Please rate each sentence listed below using this scale and circle the number closest to your opinion:

1 = no influence
2 = little influence
3 = some influence
4 = big influence

		No influence	Little influence	Some influence	Big influence
17.	Think back to a time when you got one of your best marks for a test or exam in English. Now rate the following possible influences on your mark:				
	My ability	1	2	3	4
	My effort	1	2	3	4
	The test or exam was easy	1	2	3	4
	Good Luck	1	2	3	4
18.	Now think back to a time when you got your lowest mark for a test or exam in English. Now rate the following possible influences on your mark:				
	My lack of ability	1	2	3	4
	My lack of effort	1	2	3	4
	The test or exam was hard	1	2	3	4
	Bad Luck	1	2	3	4

Appendix E:
Follow-up Graduate Survey

Appendix E: NCEA Follow-up Survey of 2005 Year 13

YOUR NAME: .....

YOUR STUDENT NUMBER (NSN) : .....

TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MĀUI
VICTORIA
UNIVERSITY OF WELLINGTON

NCEA Follow-up Survey of 2005 Year 13 Secondary School Students

Please sign the consent form on the next page, complete the survey (pages 3 & 4) and return in the self-addressed envelope, no later than by 31 January 2007 to:

Lynanne McKenzie
Research & Development Officer
Jessie Hetherington Centre for Educational Research
Victoria University of Wellington
PO Box 17-310, Karori, Wellington

JESSIE HETHERINGTON CENTRE FOR EDUCATIONAL RESEARCH
Te Puna Rangahau ki Ako Pai

Consent Form

I have read the Information Sheet and I am willing to participate in this project on the relationship between aspects of NCEA and student motivation and achievement. I understand that I have been provided with this short survey to complete and that my participation in the survey is voluntary, and that I can withdraw from the study at any time. I also understand that my identity will be kept confidential and any reports from this project will not identify me at any time.

Please complete this section

Both your names (please print clearly):

_____

Your Signature

_____

I am willing to be interviewed over the telephone as part of this project.

☐ Yes ☐ No

If yes, please enter your contact phone No: _____

JESSIE HETHERINGTON CENTRE FOR EDUCATIONAL RESEARCH
Te Puna Rangahau ki Ako Pai

Section 1: Descriptive Information

1. Name of School where you completed your secondary education

2. Your student number (NSN)

3. Gender *(Please tick)*

Male	☐
Female	☐

4. Student Status *(Please tick)*

Domestic NZ/permanent resident	☐
International	☐

Section 2: We are interested in what you have been doing since completing secondary school.

5. What have you been doing during 2006? *Please tick up to **three** things on the list below that describe what you have done most this year.*

Going to university	☐
Attending another tertiary education programme like a polytechnic or wānanga	☐
Undertaking a vocational programme to prepare me for work	☐
Full time work	☐
Part time work while I decide what to do	☐
Travelling overseas	☐
Got married and/or started a family	☐
Just been hanging out while I decide what to do	☐
Went overseas for a while, then enrolled in a tertiary degree here in New Zealand	☐
Going overseas to work indefinitely	☐
Go overseas for tertiary study	☐
Professional sports full time	☐
Other	☐

6. If you attended tertiary education in 2006:

   a. What kind of programme was it?

	Non degree programme (for example, a certificate or diploma)
	Degree programme
	Neither (please specify)

   b. What subject or professional area did you study
   Programme name (for example, BA in English): _____

   c. When do you expect to complete or did you complete the programme?

	Finished in 2006
	Will finish in 2007 or later
	Do not plan to finish the programme

7. If you did not attend a tertiary institution in 2006 what did you mostly do? (for example, builder's apprentice, waitress, received Government benefits, please specify type of benefit)

   _____

8. What are you most likely to do in 2007?
   1= first choice for you; 2= second choice for you; 3 = third choice for you and leave the others blank.

Go to university	
Attend another tertiary education programme like a polytechnic or wānanga	
Undertake a vocational programme to prepare me for work	
Full time work	
Part time work while I decide what to do	
Travel overseas	
Get married and/or start a family	
Hanging out while I decide what to do	
Travel overseas for a while, then enrol in a tertiary degree here in New Zealand	
Go overseas to work indefinitely	
Go overseas for tertiary study	
Do professional sports full time	
Other	

9. Why did you select your first choice for 2007? _____

Appendix F:

2005 Student Survey Factor Structures and Item Loadings

Appendix F: 2005 Student Survey Factor Structures and Item Loadings

Item loadings on the three-factor model of Influences on Subject Choices for the Year 11-13 Student Survey results

Item Number and Name	Utility/Importance	External Factors	Interest
q15 It was suggested to me by the Dean or careers advisor at school	.64	-	-
q22 I need it for tertiary entrance	.63	-	-
q18 It is related to what I will study at tertiary in the future	.61	-	.40
q16 A teacher influenced me to take it	.61	-	-
q19 It is related to a future job or career goal	.56	-	.40
q10 The assessment included opportunities for Merit and Excellence and not just achievement	.48	-	-
q14 My family/whānau wanted me to take it	.48	-	-
q21 Because the subject is assessed by assignments and not final exams	-	.67	-
q13 My friends are taking it	-	.65	-
q7 The subject is easy	-	.61	-
q20 I like the teacher who teaches the subject	-	.56	-
q17 It fitted my timetable	-	.49	-
q8 I'm interested in the subject	-	-	.80
q12 I enjoy the subject	-	-	.78
q9 I'm very good at the subject	-	-	.62
q11 The subject gets me the number of credits I need	-	-	-

Item loadings on the two-factor model for how students think about their school learning for the Year 11-13 Student Survey responses

Item Number and Name	Doing My Best	Doing Just Enough
q35 I strive for Merit or Excellence even when I don't need this to achieve my goals	.76	-
q40 I want to take credits that allow me to try for Merit or Excellence, rather than just achieved	.72	-
q28 I expect to get Excellence or at least Merit when I try	.70	-
q42 I aim at getting a good education, not just completing tasks to get credits	.65	-
q24 I think my school work is important for my future goals in life	.65	-
q27 My teachers think I am a strong student academically	.59	-
q26 My teachers think I work hard and try to do my best	.59	-
q30 I love to study in school for learning's sake	.57	-
q29 For me, getting Achievement is good enough	-.51	.50
q31 It bothers me if I get a Not Achieved	.50	-
q37 I want credits from school that lead to a good job or career	.50	-
q32 My family/whānau expects me to get all three levels of NCEA, 1, 2, and 3.	.49	-
q36 I work for the number of credits I need at each level, no more	-	.67
q41 Once I've got my 80 credits, I'm satisfied	-	.63
q39 I prefer credits that point to life skills and vocational job-related skills to those that are just academic or leading to further study	-	.56
q38 What my friends think influences whether I work in school	-	.53
q33 If I get just NCEA level 1 or possibly NCEA level 2 before I leave school, Ill be satisfied and have no plans to finish level 3	-	.51
q43 The subject interferes with part-time work commitments	-	.48
q23 I need to be encouraged to work in school as I sometimes have other priorities	-	.48
q34 Ill do just what I have to do in order to get University Entrance	-	.39
q25 I don't think school really matters in the long term	-	-

Item loadings on the three factor model of aspects of NCEA which students like and dislike for the Year 11-13 Student Survey results

Item Number and Name	Work Avoidance	Getting Feedback	Excellence
q55 Not having to do parts of a course that I don't like when I don't need those credits	.75	-	-
q56 Being able to choose which parts of the course I want to study	.70	-	-
q57 Not having to pass more than 80 credits to get my NCEA	.70	-	-
q46 Being able to relax after I get my 80 credits	.62	-	-
q54 Being able to pick up achievement standards from an earlier level later on	.50	-	-
q47 having the opportunity to get credits for things as I go along	-	.75	-
q51 Taking subjects where the teacher assesses my work during the course rather than only through a final exam	-	.68	-
q50 Spending time working on NCEA assessments	-	.60	-
q49 getting feedback on my work	-	.56	-
q48 being able to get credit for the parts I know rather than just being tested on whole subjects	-	.56	-
q53 being able to study different subjects at different levels of NCEA during a particular year	-	-	.69
q52 having a final end-of-course external exam with a grade scales so I can compare myself to others	-	-	.65
q59 I would like more details about my marks, not just achieved/ not achieved, Merit ot Excellence	-	-	.52
q58 being able to seek more than the minimum credits whenever I wish	-	-	.43

Item loadings on the three-factor model of Influences on Subject Choices for the Year 10 Student Survey results

Item Number and Name	Utility/Importance	External Factors	Interest
q22 I need it for University Entrance	.67		
q15 Its suggested by the Dean or Careers advisor at school	.63		
q16 A teacher influences me to take it	.61		
q18 it is related to what I might study at tertiary in future	.57		.46
q10 The assessment will include opportunities for Merit and Excellence not just achieved	.50		
q11 The subject gets me the number of credits I need	.49		
q14 my family/whānau want me to take it	.44		
q13 My friends will be taking it		.67	
q20 I like the teacher who teaches the subject		.64	
q21 Because the subject is assessed by assignments and not final exams		.62	
q7 The subject is easy		.61	
q17 It fits my timetable		.51	
q8 I'm interested in the subject			.78
q12 I enjoy the subject			.77
q9 I'm very good at the subject			.58
q19 it is related to a future job or career goal	.50		.55

Item loadings on the two-factor model for how students think about their school learning for the Year 10 Student Survey results.

Item Number and Name	Doing My Best	Doing Just Enough
q40 I want to take credits that allow me to try for merit or excellence rather than just achieved	.72	
q35 I will strive for Merit or Excellence even when I don't need this to achieve my goals	.72	
q28 I expect to get Excellence or at least Merit when I do NCEA	.71	
q24 I think my school work is important for my future goals in life	.65	
q42 I aim at getting a good education, not just completing tasks to get credits in NCEA	.65	
q26 My teachers think that I work hard and I do my best	.59	
q37 I want credits from school that lead to a good job or career	.58	
q27 My teachers think that Im a strong student academically	.57	
q32 My family/whānau expects me to get all three levels of NCEA, 1, 2, and 3	.54	
q30 I love to study in school for learning's sake	.51	
q31 it will bother me if I get a not achieved	.42	
q36 I will work for the number of credits I need at each level, no more		.69
q41 Once I have my 80 credits, Ill be satisfied		.62
q43 The subject would interfere with part-time work commitments		.61
q33 If I get just NCEA level 1 or possibly NCEA level 2 before I leave school, I will be satisfied and have no plans to finish level 3		.58
q38 What my friends think influences whether I work in school		.53
q39 I prefer credits that point to life skills and vocational job-related skills to those that are just academic or leading to further study		.53
q29 For me, getting achieved will be good enough		.52
q23 I need to be encouraged to work in school as I sometimes have other priorities		.51
q25 I dont think school really matters in the long run		.47
q34 I do just what I have to do in order to get university entrance		.41

Item loadings on the three-factor model of aspects of NCEA that students like and dislike for the Year 10 Student Survey results

Item Number and Name	Work Avoidance	Getting Feedback	Excellence
q47 having the opportunity to get credits for things as I go along	.68		
q49 Getting feedback on my work	.67		
q51 Taking subjects where the teacher assesses my work during the course rather than only through a final exam	.59		
q50 Spending time working on NCEA assessments	.53		
q48 being able to get credits for the parts I know rather than the just being tested on whole subjects	.52	.46	
q59 I would like more detail about my marks, not just achieved/not achieved, merit or excellence	.47		
q58 being able to seek more than the minimum credits whenever I wish	.44		
q55 Not having to do parts of a course that I don't like when I don't need those credits		.73	
q57 Not having to pass more than 80 credits to get my NCEA		.67	
q46 being able to relax after I get my 80 credits		.67	
q56 Being able to choose which parts of the course I want to study		.65	
q52 having a final end-of -course external exam with a grade scaled so I can compare myself to others			.74
q53 Being able to study different levels of NCEA during a particular year (e.g. taking one level 2 subject in year 11 along with my level 1 subjects)			.73
q54 being able to pick up achievement standards from an earlier level later on (e.g. waiting to get level 1 numeracy credits in year 12 along with my level 2 subjects)			.57

Appendix G:

2006 Student Screening Tool Factor Structure and Item Loadings

Appendix G: 2006 Student Screening Tool Factor Structure and Item Loadings

Item loadings on the two-factor model for how students think about their school learning

	Item Number and Name	Doing My Best	Doing Just Enough
13.	I want to take credits that allow me to try for Merit or Excellence, rather than just Achieved	.82	
10.	I will strive for Merit or Excellence even when I don't need this to achieve my goals	.81	
8.	I expect to get Excellence or at least Merit when I do NCEA	.79	
15.	I aim at getting a good education, not just completing tasks to get credits in NCEA	.65	
11.	I will work for the number of credits I need at each level, no more		.76
14.	Once I have my 80 credits, I'll be satisfied		.72
12.	I prefer credits that point to life skills and vocational job-related skills to those that are just academic or leading to further study		.70
9.	If I get just NCEA Level 1 or possibly NCEA Level 2 before I leave school, I'll be satisfied and have no plans to finish Level 3		.62