Learning Curves:

Meeting student learning needs in an evolving qualifications regime

Shared pathways and multiple tracks: A second report

Rosemary Hipkins, Karen Vaughan, Fiona Beals, and Hilary Ferral

Downloaded from http://www.nzcer.org.nz/pdfs/12798.pdf

New Zealand Council for Educational Research
Te Rünanga o Aotearoa mö te Rangahau i te Mätauranga
Wellington
2004

New Zealand Council for Educational Research
P O Box 3237
Wellington
New Zealand

© NZCER, 2004

ISBN 1-877293-34-2

Distributed by NZCER Distribution Services
P O Box 3237
Wellington

Acknowledgments

We thank the principals, heads of departments, deans, and the Years 11 and 12 students of our 6 *Learning Curves* schools. Their continuing interest in our project and willingness to share their thoughts and experiences is much appreciated. We also thank those members of the management team in each school who organised our visits, and smoothed the path of the busy field work days.

In 2003 the project was expanded to include Year 12 students and the New Zealand Qualifications Authority assisted with the funding needed to cope with the considerable volume of additional data. We are grateful for their support.

Many members of the NZCER staff have assisted us in various ways to complete this second stage of the project. We thank Cathy Wylie for her critical thinking and professional leadership. Edith Hodgen and her data team smoothed the flow of the large volumes of data generated by the student questionnaires – which had first been coded by Lia Mapa. Christine Williams and Suzanne Hay provided office support in many unsung ways and Kristina Louis provided invaluable and timely information services. We also thank Bev Webber for publishing support and Rob Murray for managing communications aspects of the project.

© NZCER

© NZCER

Contents

© NZCER

© NZCER

© NZCER

© NZCER

© NZCER

© NZCER

© NZCER

Tables

© NZCER

© NZCER

Figures

© NZCER

Diagram

Appendices

© NZCER

© NZCER

Executive summary

This report documents the findings of the second year of the 3-year study *Learning Curves: Meeting student learning needs in an evolving qualifications regime.* This project is documenting changes in the subject and assessment choices offered to senior students in 6 New Zealand secondary schools as the NQF/NCEA qualifications reforms are progressively implemented. It is also investigating how students perceive and make their subject choices within the context of each school's curriculum policies and practices.

The field work for this phase was carried out in the 6 *Learning Curves* schools during April/May 2003. As in 2002, the principal and the HODs of 5 subjects (English, mathematics, technology, arts, and science) were interviewed in each school. In 2003, the Years 11 and 12 deans were also interviewed. The student survey aspect of the study was expanded in 2003, with both Year 11 and Year 12 students surveyed in all 6 schools.

Four NCEA-related issues that were identified in 2002 are explored from the teachers' and principals' perspectives. These are the desirability of reducing the number of credits offered per course, the use of the qualifications data in schools and in the wider community, increased teacher workloads as the NCEA is being implemented, and parents' understanding of the qualifications reforms. A fifth issue that arose in 2003– the equivalence of achievement and unit standards – is explored.

Subject choices in the six schools

One year on, all 6 schools had made minor changes in their mix of subject options, but more extensive within-subject changes had been triggered by the NCEA reforms, especially in the "core" curriculum subjects. As in 2002, the widest range of optional subjects was offered within the technology curriculum area.

At Year 11, different types of options were offered in the 3 compulsory curriculum subjects, to better meet the learning needs of different groups of students. All 6 schools offered 2 types of Year 11 English, 5 offered 3 types of mathematics, and all offered at least 2 types of science. Year 11 PE/health was also compulsory in some schools and was the next most commonly taken subject. The most popular optional Year 11 subjects across the 6 schools were history, geography,

© NZCER

visual art, drama, music, information management, graphics and design, computer studies, accounting, and home economics.

All the schools offered a wider range of subjects at Year 12 than at Year 11. Only English was compulsory and a range of options was provided. Some students chose an equivalent subject such as media studies or te reo Mäori in place of English. Eighty-one percent of the Year 12 cohort continued to take a mathematics option. Subjects chosen by 10 percent or more of the Year 12 students were the 3 traditional science disciplines (biology, chemistry, physics), PE/health, recreation and sport studies, history, visual art, drama, information management, graphics and design, computer studies, and accounting.

There was an effective expansion of options when some students studied subjects at 2 different year levels. Only a very few Year 11 students (5 percent) were studying a subject at Year 12 or 13 but more Year 12 students (14 percent) were studying at Year 11 or Year 13 in some subjects. In English some Year 12 students were studying with their year cohort but being assessed using level 1 standards. Three schools managed this process by keeping the teaching of equivalent Years 11 and 12 English topics synchronised.

Most schools remained concerned about the variety of optional courses they were able to offer for lower-achieving students. However, any further changes to the mix of subjects offered would have required considerable juggling of both timetable and staff. Several principals said that in future new subjects are more likely to be replacements than additions to the mix of subjects offered.

NCEA and the evolving nature of school subjects

Data gathered in 2003 allowed us to analyse within-subject options in English, mathematics, and science in terms of assessment instruments used. This process identified 3 types of options, although the boundaries between 2 of them are somewhat blurred.

Traditional-discipline options

Across the 6 schools, the majority of students are studying Year 11 English, mathematics, and science in what we have called "traditional-discipline" options. The characteristics of assessment for qualifications in these options are: assessment is mostly by achievement standards; all or most of the subject-specific suite of achievement standards for the year level/subject are used; the curriculum offered tends to be organised around the divisions imposed by the separate standards; and these divisions reflect traditional ways of thinking about the structure and content of each discipline or subject within the school curriculum.

© NZCER

Locally-redesigned options

We identified some courses in which the traditional-discipline structures were beginning to evolve as schools shaped courses to meet the learning needs of specific groups of students. We have called these "locally-redesigned" courses. They have the following assessment-for-qualifications characteristics: assessment may be by a mix of achievement and unit standards; different mixes of standards are chosen at each school; at Year 12 some standards used to assess the course are set at NQF level 1 and some are set at NQF level 2. In these courses, the curriculum usually continues to be organised around the assessment instruments used, but most courses "cover" less of the traditional curriculum content, allowing for some variation in pacing and limited introduction of broader contexts for learning. Locally-redesigned courses that blur level 1 and 2 boundaries were most likely to be offered in mathematics.

Courses with a different type of redesign, where traditional-discipline boundaries break down by offering assessment standards from different curriculum areas (for example, mathematics and music, or several different science disciplines) are beginning to be discussed.

Contextually-focused options

A third type of option has evolved from what would have been called "vocational" or "applied" courses. We have called these courses "contextually-focused" because they make closer links to students' everyday life contexts or to contexts of future work or leisure. They have the following assessment-for-qualifications characteristics: assessment is mainly by unit standards; a reduced number of credits are offered; and assessment is exclusively or predominantly internally managed – students seldom sit end-of-year national examinations. The division of the curriculum into topics may or may not reflect traditional partitioning of knowledge and there is an emphasis on skills and "doing", rather than the recall of acontextual knowledge.

All 6 schools offer contextually-focused courses in English, mathematics, and science, at both Year 11 and Year 12. These courses are taken by a minority of students, although proportions differ across the 6 schools. Several schools are considering the introduction of contextually-focused options in traditional technological areas such as hard materials, to counter what is seen as the "intellectualisation" of technology. Home economics already offers such an alternative to food technology and was one of the most popular 2003 optional choices at Year 11. Students' reasons for taking this subject are explicitly linked to its contextual focus – they chose it for "life skills" and for "the practical aspects".

The names we chose for the 3 types of courses are intended to challenge long-held assumptions about the types of courses that certain "types" of students ought to take. Other researchers have identified some of the features we have described for locally-redesigned and contextually-focused courses as those that ought to characterise learning for the "knowledge society", albeit with levels of intellectual challenge appropriate to the needs of all types of learners, including those who will go on to be the "innovators" needed to keep the economy competitive in a global context.

© NZCER

Teachers in the curriculum areas of technology and the arts are, in general, more actively engaging with subject composition as they design new school subjects for their relatively recently devised curriculum statements. The popularity of the newer arts subjects, especially drama, attests that these evolving subjects are attuned to students' learning interests.

Graphics and design, another very popular course, could be seen as having some locally-redesigned features (it blurs the boundary between arts and technology) and some contextually-focused features (many 2003 students at both Years 11 and 12 chose it with future careers in mind). However, this subject is also assessed with a full suite of its own achievement standards and at Year 12 was taken in the main by students who were studying traditional-discipline versions of both English and mathematics. This mix of features from across all 3 "subject types" may well become more common in the future.

NCEA and the challenge of meeting students' learning needs

As in 2002, principals and teachers continued to be positive that the NCEA had allowed them to offer courses in the compulsory curriculum subjects that better met the needs of low- or under-achieving students than they had in the past. There were more students in the locally-redesigned or contextually-focused mathematics courses than in the equivalent English courses, in part because English was more likely to be assessed at multiple NQF levels within one class.

About a third of the students who were taking a locally-redesigned or contextually-focused mathematics course were also taking an equivalent English course and/or an equivalent science course. The choice of one or more of these courses was also associated with the choice of other contextually-focused courses such as computer studies, information management, vocational studies, transition, or home economics. Most teachers and principals thought that earning credits for the NCEA or other national certificates was now more within the reach of low-achieving students. They described increased motivation to learn, increased achievement in English and mathematics, increased student confidence in their learning, and in one case some students returning to school to try again. It could be seen that these subject combinations "stream" some students into a cluster of courses with similar features. A countering view is that these students' continuing engagement with learning keeps options open that could otherwise be difficult to re-establish in later life. Another countering view is that features of these contextually-focused courses align more closely with the rhetoric of learning for a knowledge society than do the features of more traditional subjects.

There was less comment about meeting the needs of high-achieving students in 2003, although there was a relatively common perception that excellence levels had been set rather higher than in the past in some subject areas. Some concerns were expressed about seeming inconsistencies in judgments made for achieve/merit/excellence levels in specific achievement standards – both within and between subjects. Physics, history, accounting, and graphics and design (at Year 12)

© NZCER

were optional subjects significantly more likely to be taken by students who were also taking traditional-discipline English and mathematics courses.

Some English HODs noted an improvement in students' formal writing skills since the NCEA initiative began. However, science HODs were concerned about the level of literacy required to write the more open style of answers required for externally assessed achievement standards, fearing these disadvantaged students with weaker literacy skills.

In the technology curriculum, assessment by achievement standards appeared to be promoting an increased status for technology subjects and an increased ability to attract academically successful students. However, this shift did not yet seem to be matched by a shift in some parents' and teachers' understandings about what technology now is or how best to use its potential. While there were now more opportunities for some students, low-achieving students were struggling with a content that focused on design planning over hands-on crafting.

Some arts HODs felt that curriculum organisation within their school discouraged and disadvantaged students taking arts subjects. Others were concerned with the number of assessments and overall level of achievement in the arts, particularly as it related to finding a balance between encouraging and retaining students in a relatively low-status curriculum area while maintaining "academic rigour".

While they initially found it overwhelming in volume and detail, all 6 schools used the 2002 qualifications data to decide on students' eligibility to enter certain Year 12 courses in 2003. In this context, the importance of choosing appropriate subject pathways, and of achieving key standards within subjects, becomes more of an issue than it might have been when global examination marks were awarded. Parents are the people most likely to influence students' subject choices in all areas of the curriculum. While principals and teachers think parental understanding of the NCEA is improving there are still concerns about the level of support and advice they can give their children.

Teachers were very concerned at an apparent loss of motivation by some Year 12 students who had begun to exercise unilateral choices in the specific standards for which they would be assessed. Unless they were well informed, these students could inadvertently find some study pathways closed to them at Year 13. There was also some uncertainty and concern about high-achieving students' Year 13 choices and the impact omission of or failure to achieve key standards might have on pathways from school to university study.

Achievement standards vs. unit standards

Amongst the teachers there was a relatively common view that achievement standards are perceived to be superior to unit standards. Some teachers thought this is "official NZQA policy", which is not the case. Some teachers thought parents hold this view, and want their children to be assessed using achievement standards in preference to unit standards. Some teachers thought that

© NZCER

students hold this view, and take it into account when deciding which courses they will take. It may be that the practice of collating individual students' achievement data for comparative purposes and the rewarding of high educational achievement (for example, by calculating a subject "grade average" based only on results for achievement standards) supports this perception. There are some troubling consequences when schools are considering ways to evolve course structures to better meet a range of student learning needs.

Although all 6 schools offered contextually-focused courses to meet the learning needs of their lower-achieving students, a few HODs thought they were still seen as "cabbage" options because they were primarily assessed with unit standards. If new courses for all types of learners are to be designed with the features of the current locally-redesigned and contextually-focused courses – as advocated in future-focused curriculum change literature – this perception will need to be overcome. Alternatively, a way might be found to structure new achievement standards so that they can be used to assess some types of knowledge and practical skills that seem currently to be mainly assessed by unit standards. No doubt this is an issue that will be addressed as the NCEA continues to evolve.

Another issue was a tendency to see the reward of *assessment* credits as a means of ensuring that students take their *learning* seriously. In one interpretation of the view that achievement standards are superior, some HODs thought high-achieving students would be attracted to "grunty" courses that offer a high number of credits assessed by achievement standards – preferably externally assessed. Competition for students in senior courses was one reason HODs were reluctant to adopt MOE advice to offer fewer credits per course, or to use more unit standards, even where they would have liked to do so. In another interpretation of the view that achievement standards are superior, some HODs suspected that other HODs offered courses with more unit standards in the hope that students would perceive them as an easy way to get credits. These HODs worried that courses with "more rigour" would be out-competed in attracting students, and might disappear from the school's curriculum.

There are consequences for these lines of reasoning. HODs could see the negative impact of over-assessment on their students, and some felt there is insufficient time and flexibility to teach their subjects as they would wish, yet they still offered 24-credit traditional-discipline courses for the majority of students. Some also resisted credit reduction because they feared students would "slacken off" if learning was not explicitly linked to the opportunity to gain credits. However, this method of motivation became problematic at Year 12, where there was a concern that some students were not working hard because they had realised that they would easily get the credit totals they needed.

Although the NCEA was designed to assess the achievement of individual students, problems arise when the qualifications data is used to make inter-school comparisons. In 2002, some schools did not formally enter students for achievement or unit standards when they had not been successful in internal assessments. These schools saw this as common-sense, and a means of saving the cost of students' entry fees. Schools that did enter all their students regarded non-

© NZCER

reporting with concern because it skewed overall school performance patterns and resulted in unfair comparisons when “league tables” were constructed and published. In a similar vein, some saw the practice of offering courses with reduced credit totals as “cheating” where they suspected an intention to boost league table placings by ensuring that more students achieved more standards at merit and excellence levels. These issues need to be examined more critically. Withholding “not-achieved” student records was a more transparent form of previous practice when students were discouraged from sitting external examinations if they were likely to fail.

Teacher workload issues

Teachers in all 6 schools continued to express concerns about the heavy workload generated by NCEA implementation, especially for the curriculum leaders. Where schools had organised a regular in-school time for teachers to discuss and implement their NCEA plans, this made aspects of implementation such as within-school moderation much easier to organise. Close collaboration is needed to develop and moderate tasks, assess students’ learning using them, and then moderate judgments made about the students’ work. Principals and some HODs saw benefits in the necessity for teachers to work more closely together as they do this than had been the case in the past.

Although teachers felt that the NCEA initiative has been “made to work at our expense”, they were mostly supportive of the benefits for meeting students’ learning needs, especially the needs of less able or under-achieving students. The arts HODs were developing their understandings of a newly organised curriculum at the same time as they were implementing the NCEA. The challenge of developing the most appropriate technology pathways for students has drawn attention to a shortage of staff with suitable expertise to teach the new technology curriculum.

Students’ views of influences on their subject choices

At both year levels many students chose their subjects in the expectation that they would enjoy their learning. For most students “enjoyment” meant that they expected their subjects to be challenging and interesting, and in subjects where this was relevant, that they would enjoy the practical aspects. Contrary to some of the HOD views, relatively few students appeared to select any subject at either year level with the expectation that their choice would be enjoyable because it was easy.

“Future plans” were frequently cited as having influenced the choice of mathematics, English, and science options, at both Year 11 and Year 12. “Future study”, “future career”, and “life skills” were all cited by more than 50 percent of students as aspects of those choices. Fewer students cited future study as an influence on their choices of optional subjects (the exception was Year 12 accounting). Gaining life skills was cited as a reason for choosing a number of contextually-

© NZCER

focused optional courses, and also Year 11 arts courses. Across the range of the top optional subjects, future career was cited as a reason for choosing accounting and graphics and design at both Years 11 and 12.

Fewer students chose "other people" as a factor that influenced their choices. When they did so, parents were the people most likely to have influenced choices in any subject. At Year 11, students who were taking locally-redesigned or contextually-focused options in the compulsory subjects were more likely to say parents had influenced their choices, but not so for Year 12 students. Those Year 12 students who chose traditional-discipline mathematics were more likely to say that their parents had influenced this choice. Generally, if students were happy with their choices, they thought their parents were happy too.

Few students said that the prospect of "easy NCEA credits" influenced any subject choices, at either year level. However, within this small pool, students who were taking locally-redesigned or contextually-focused versions of the compulsory subjects were more likely to indicate this influence than students taking traditional-discipline options.

Choice and timetable issues

The majority of students at both Years 11 and 12 took 6 subjects, with a few taking 7. Notwithstanding this range of choice, about half of each year group indicated that there was at least one subject offered by the school that they wanted to take but for some reason were unable to choose. Constraints related to timetable issues – both direct clashes and over-full classes – or to lacking the necessary prerequisites for specific subjects.

Both Year 11 and Year 12 students wanted to take more subjects in the arts. Year 11 students also wanted to take PE/health and home economics. Year 12 students also wanted to take PE/health, recreation and sport, and media studies. Year 11 students were more likely to have chosen vocational subjects they wanted because there were less compulsory courses at this level. Languages and vocational subjects were the areas in which students wanted to take subjects not currently offered by their schools. By far the most commonly cited reason for desiring these subjects was for personal interest and enjoyment.

© NZCER

Section One

Introduction

This is the second year of a 3-year study currently being undertaken by NZCER. The full project title is *Learning Curves: Meeting student needs in an evolving qualifications regime.* The research is set against the background of the introduction of the new senior secondary school qualifications, the National Certificates of Educational Achievement (NCEA), within the context of the progressive introduction of an overarching National Qualifications Framework (NQF).

The research is exploring how school practices reflect the intention of the national curriculum to provide "flexibility, enabling schools and teachers to design programmes which are appropriate to the learning needs of their students" (Ministry of Education, 2001b). The primary focus is on how school subject-choice policies and practices change as a result of the NCEA implementation. However, we are also interested in how students perceive and make their subject choices within the context of each school's assessment policies and practices.

The *Learning Curves* project has been designed with a case study approach. Each of the 6 schools in the project represents one "case" in which the changes we are tracking are situated in the specific context of that school and its community. The schools are similar in size, and were selected to represent a diversity of student groups and contextual settings. Three are city schools and 3 are in rural towns. Four are co-educational; 2 are single sex. Full descriptions of the curriculum offered in each school at the outset of the NCEA in 2002 are included in *From Cabbages to Kings* (Hipkins and Vaughan, 2002a). In this report a brief description of each school has been repeated at the beginning of the relevant profile.

Guide to the 2003 report

This report is divided into 14 sections as follows.

© NZCER

Section One: Introduction

Section Two: Methodology

This section outlines the research questions and the approaches taken to gathering and analysis of the qualitative data gathered from interviews with principals and HODs in the 6 schools; and quantitative data gathered from questionnaires completed by Years 11 and 12 students in the 6 *Learning Curves* schools.

Section Three: The 2003 year in the six schools

This section updates information about school contexts for each of the 6 schools. It provides a 2-page profile of the subject-choice context in each school in 2003.

Section Four: Patterns in the range of subject choices

This section summarises the numbers of options and subjects offered at Years 11 and 12 in the 5 curriculum areas that are the focus of this study. Single-page overviews of the Years 11 and 12 subjects offered in each school are provided and the views of the deans who provide subject-choice guidance in most of the schools are reported.

Section Five: The impact of the NCEA on students' learning

In this section the views of the staff across all 6 schools concerning the impact of the NCEA on their ability to meet students' learning needs are outlined.

Section Six: Issues associated with the NCEA implementation

Four NCEA-related issues that were identified in 2002 are explored from the teachers' and principals' perspectives. These are the desirability of reducing the number of credits offered per course, the use of the qualifications data in schools and in the wider community, increased teacher workloads as the NCEA is being implemented, and parents' understanding of the qualifications reforms. A fifth issue that arose in 2003 – the equivalence of achievement and unit standards – is explored.

Section Seven: The nature of variation in options offered for core subjects

This section explores the nature of the various options that the 6 schools offer within the compulsory subjects of mathematics, English, and science. From an analysis of the composition

© NZCER

of NCEA assessment instruments used for the various courses, and teacher comments about how these combinations were decided upon, 3 types of courses are characterised.

Section Eight: Technology – new pathways for students

Here the various technology courses at Years 11 and 12 are outlined and issues arising from the interviews with the HODs are discussed. This section revisits the academic/vocational divide and the “intellectualisation” of technology.

Section Nine: Learning in the arts

In this section the arts courses offered at Year 11 and Year 12 in each school are documented and the views of the HODs are reported and discussed.

Section Ten: Influences on student choices of English and mathematics options

This section reports on factors that students identified as influential in their decision-making about the choice of English and/or mathematics options they were offered. Since English is compulsory at both Years 11 and 12, and mathematics is compulsory at Year 11, these “core” subjects in all 6 schools are discussed at some length.

Section Eleven: Choosing sciences

Factors that students said had influenced their choice of science options at Years 11 and 12 are outlined.

Section Twelve: The optional subjects

The most popular optional subjects at Years 11 and 12 are identified in this section, along with reasons the students reported as having influenced these choices.

Section Thirteen: Subject changes, new possibilities

This section reports on the subjects students were unable to take, primarily because of timetable clashes although some other reasons are identified. Subjects that students would like to take, but that are not offered by the school, are named.

Section Fourteen: Issues and questions

This section draws out themes from the preceding sections and continues the discussion initiated in the 2002 report.

© NZCER

© NZCER

Section Two

Methodology

The research questions

Six questions informed the initial design of this 3-year study.

- How do schools' assessment regimes, course structures, and selection practices reflect the intention of the national curriculum, in particular the principle of providing for "flexibility, enabling schools and teachers to design programmes which are appropriate to the learning needs of their students"?
- Do students perceive their choices in the same manner as their teachers?
- Do students perceive their choices in the same manner as their parents?
- Are there any patterns in student subject-choice in relation to subject-clustering, socio-economic status, ethnicity, and gender?
- Are schools assessing and reporting on a wider range of student abilities than they were prior to the introduction of the NCEA?
- Have school subject-choice policies been changed as a result of the NCEA? If so, how?

As the research has unfolded the focus has been primarily on the first, second, and sixth questions, with some change to the fourth question. In 2002 no significant patterns related to socio-economic status and/or ethnicity were found. We did not seek such patterns in 2003, concentrating instead on what emerged in 2002 as the major influences on Year 11 students' decision-making. The explicit focus of the 2003 student questionnaires is discussed below.

While some insights into the third question (parents' perceptions) have arisen from the students' responses, we have not been able to elicit their views directly and thus less attention has been paid to this question. The question that addresses the range of student abilities now assessed has also become a minor focus in this data round. While we see this question as important, other issues were sharply in focus in our 2003 conversations with the teachers, which took place as the NCEA qualification was being offered at 2 year levels for the first time.

Overview of data gathering

Initial visits to each school were carried out during March–April 2002 and return visits were made in April–May 2003. The principal and 5 selected Heads of Department in each school were

© NZCER

interviewed in the 2002 round and in most cases were re-interviewed in 2003. The deans were also interviewed in the 2003 round, mostly for the first time. A more detailed discussion of the qualitative analysis follows.

Descriptions of the detailed timetable contexts of each school were reported in 2002 (Hipkins and Vaughan, 2002a). The 2002 timetables were used as a baseline to compare 2003 timetables in the 6 schools.

In all 6 schools responses to the student questionnaire were sought from the full cohort of Year 11 students, as for 2002. In 2003 the research was expanded and responses were also sought for the Year 12 cohort in each school. 2003 was the first year at which the NCEA was implemented at level 2 so this perspective is an important addition to the overall research.

There were some minor variations in the means used in each school to facilitate questionnaire completion. These variations are described in the introduction to each school profile in this report. A more detailed discussion of the questionnaire design and analysis follows.

Qualitative analysis of changes in school contexts

In the light of the 2002 findings we made some modifications to the 2002 interview schedules for the 2003 data gathering round.

Sets of interviews were searched for common themes in 2 different ways:

- For the school profile analysis (Sections Three and Four) comments made by all the interviewed staff within the school were collated and compared; and
- For the common issues (Sections Five and Six) and the subject-specific analyses (Sections Seven–Nine) comments made by all the HODs of the relevant subject were collated and compared.

Varying the subject

A key finding of the 2002 round was that there was choice *within* compulsion for the core subjects in all 6 schools and that this represented a recent change in many cases. In the 2002 year, 5 of the 6 schools offered 3 mathematics options and all of them offered 2 English options at Year 11. Five of the 6 also offered at least 2 science options. We found that many of the interviewed HODs in the core subject areas were very positive about the opportunities they could now provide to break down perceptions of "cabbage"[1] subjects – in English and mathematics in particular (Hipkins and Vaughan, 2002a). However because we had not anticipated the extent of this diversity we did not gather data that would have allowed us to describe the actual composition of the various options on offer within the compulsory subjects. The relevant details were collected in 2003 and the discussion of the patterns revealed forms 3 sections of this report.

1 "Cabbage" is a pejorative term for a subject that is seen to be undemanding intellectually.

© NZCER

Multi-level learning

As the individual school summaries will show, much of the apparent increase in flexibility of choices at Year 12 has arisen from more or less *informal* accommodations that allow a few individual students to study for qualifications up or down one year level in certain subjects. This situation is not new – schools have long accommodated the needs of some students this way, and so the apparent flexibility of choice at Year 12 in 2003 can only be cautiously compared with the fixed timetable structure for Year 12 in 2002. We report on the numbers of Years 11 and 12 students working at the different timetable levels so the extent of these arrangements in each school can be judged. Comments made by some teachers in 2002 (Hipkins and Vaughan, 2002a) suggested that an erosion of distinct year levels in the senior secondary school might be underway as a result of the NCEA implementation. For 2003, we provide preliminary data that begin to illustrate the process in action in the 6 schools.

Meeting student learning needs

At the beginning of each interview we asked people to respond to this rating scale used in 2002 to evaluate the school's ability to cater to the learning needs of Year 11 students:

extremely well   very well   fairly well   not very well   not well at all

We took copies of the 2002 interviews with us, and some staff asked to see their previous rating. They were shown this after they had responded with their perceptions for 2003. We then asked if there were any differences in the school's ability to meet Year 12 students' needs, as opposed to Year 11, but did not ask for these to be rated separately. Where a response was made between 2 numbers on the scale we chose to collate this as the more positive number – that is a response made between "very well" and "fairly well", for example, was rated as a "very well". We did this because equivocal responses were typically prefaced by comments that began "Well I would rate it as "very well" but there's just this one little thing…" and these accompanying qualifying comments are captured in the body of the report.

Staff perspectives on student learning and achievement

In 2002 we reported teachers' views of the impact of the NCEA on students' learning within individual subjects. In 2003 we asked them to comment on whether the changes they had anticipated had actually occurred, and also about how they expected to see these changes play out in the achievement patterns of the Year 12 students. Comments that summarise shared or contrasting perspectives of staff within each school are summarised in Sections Five–Six and subject-specific comments are discussed in Sections Seven–Nine.

Credit reduction

In early August 2002, when the decision to proceed with the NCEA implementation at level 2 was announced, the Minister of Education suggested that teachers should consider working with fewer

© NZCER

standards. Pointing out that the NCEA offered a large degree of flexibility, he suggested that schools should consider how many credits students actually needed to achieve, rather than assessing them against the full range of standards available at any one level. He said that he expected "much less assessment for next year's Year 11 (level 1 NCEA) students. For example, once level 2 is in place, the necessity for all students to complete a level 1 certificate will be reduced" (Minister of Education, 2002).

One reason given to support this suggestion was that it would allow teachers to spend more focused time on classroom teaching and learning – a response to criticism that assessment was narrowing the learning that students were experiencing. The other reason related to the need to address heavy teacher workloads associated with NCEA implementation. Both reasons are included in NZQA's outline of strategies to support implementation of level 2 of the NCEA:

> However, as with the introduction of any new system, there is no doubt that many teachers are working very hard and additional workload is occurring as programmes of work, administration systems and adjustment to assessment processes are managed. For this reason, the Ministry and NZQA have recently begun further initiatives of support, as outlined in Update 13.
>
> We agree with those who have written to say to us that learning needs to be the priority, not assessment. Assessment for learning is vital, whereas it does appear that for many teachers there is too much assessment of learning taking place.
>
> This concern lends support to those schools and teachers who are encouraging their students to do fewer rather than more achievement standards for qualification recognition. By limiting the number of achievement standards undertaken by a student this enables an increased focus on getting more 'excellents'. (New Zealand Qualifications Authority, 2002).

We probed how this dual message has been interpreted by asking the principal, the deans, and the HODs about discussions of credit reduction in their schools/departments. The findings are reported in Section Six.

Use of qualifications data

During the 2002 interviews, a number of HODs speculated on the use they would be able to make of qualifications data provided by NZQA. They anticipated that this data would give them much more explicit information about students' achievement in parts within courses rather than a single global achievement mark (Hipkins and Vaughan, 2002a). In the event, the final data were not available to schools until late January 2003, just before students returned for the new school year. We asked how schools actually did use their students' results and the overall comments are reported here. Details of use of the student achievement data as entry-level requirements for selected specific subjects are reported in Sections Seven–Nine.

© NZCER

Teacher workloads/morale

In 2002 we reported on the HODs' feelings about the high workloads and the stress generated by the pace and scope of the NCEA reforms (Hipkins and Vaughan, 2002a). As one HOD observed in 2003, the wealth of creative possibilities opening up to support the learning of diverse students can only be fully realised if teachers have the time and energy to think creatively about how best to change what they do in their school. For example, suggestions such as credit reduction provoke a whole series of interrelated considerations that need to be carefully weighed in the overall school context. The creative reshaping of some courses, as outlined in Sections Seven–Nine, engenders similar demands. In addition, the work associated with the implementation of level 2 NCEA assessment has now been added to the level 1 workloads reported for last year. Workload and stress remain an issue for those involved in the implementation of the NCEA.

Parents' understanding of NCEA

There has been considerable public debate around the pros and cons of the change of assessment regime in New Zealand. The establishment of a select committee to enquire into the NCEA and its implementation processes is evidence of government concern about this. On another level, the schools in this study reported in 2002 that where parents did not understand the full import of the NCEA changes they were less able to help their children make good choices for both immediate and further learning needs. In Section Six we report school staff's collective impressions of whether or not parent understanding of the NCEA has grown over the course of the year.

Quantitative analysis of the student questionnaires

The 2002 findings were taken into account in the design of the 2003 student questionnaires. Appendix A is an example of a 2003 questionnaire. It should be noted that the first page was customised for each school for reasons outlined below. Following a discussion of reasons for changes to the questionnaire design, methodological considerations related to the quantitative analysis are briefly outlined.

School-specific subject profiles for each individual

In order to clearly identify each student's actual options, we drew on each school's 2003 subject-choice materials to begin questionnaires with a checklist of the actual subjects offered at the relevant year level (Year 11 or Year 12) in that school. We returned these pages to each school for checking prior to printing of the questionnaires, in an effort to ensure the details were accurate and that they allowed for any changes that might have taken place after the subject-choice materials were printed. (For example, advertised courses may not run if there is insufficient interest.) Notwithstanding these precautions a few mistakes escaped us, but this method nevertheless yielded far more detailed information about overall individual subject-choice patterns than was available to us in 2002.

© NZCER

A new finding for 2003 was that a number of students in each school, especially at Year 12, are studying one or more subjects at either Year 11 or Year 13 (*see* Section Four). Our customised questionnaires did not make allowance for this, nor did schools give us this feedback ahead of the data gathering.

Probing the nature of enjoyment

Findings from the 2002 research round showed that students seemed to have made their subject choices based primarily on expectations of personal enjoyment. However, we could only speculate about the major influences on perceptions that a subject would be enjoyable (Hipkins and Vaughan, 2002a). For example, we mused that a leap to thinking that personal enjoyment might also be positively correlated with the subject being perceived as easy was *not* borne out by the data. Our research did show a strong correlation between choice of PE as a subject and expectations that it will be “easy”. However, other subjects chosen for personal enjoyment were not linked to ease of learning in the same way. In fact, it seemed quite possible that some of what students find enjoyable is the challenge or demands of their subjects.

We sought to more fully explore the nature of this important influence in the 2003 data gathering round. When students selected expectation of enjoyment as a reason for choosing a subject, they were then asked to identify key factors that constituted enjoyment in that subject. The checklist provided for this purpose was based on the 2002 research findings and included the following options:

I like the teacher.
My friends are in this class.
I’m good at it.
It’s easy.
It’s interesting.
It’s challenging.
I enjoy the practical aspects.

Sources of advice on subject choice

In 2002, students said that they got advice on subject-choice from parents or caregivers rather than the school. Where students were influenced by the school, a subject teacher rather than a careers adviser or dean was more likely to have been the sounding board. In 2003 we attempted to gain a more detailed understanding of the dynamics of other people’s influences on subject choices. We used the same format as for enjoyment, asking students to respond to a checklist of possibilities that included:

Parent(s).
Teacher.
Dean.

© NZCER

Careers teacher.
Someone else (*say who in the tick box*).

Students were asked to say why they thought the identified person had encouraged them to choose the subject. This was the indirect means by which parents' input could be ascertained.

Relationships between subject-choice and future plans

In 2002 we found that the core subjects (English, mathematics, science) were understood by many students in all 6 schools to be an important foundation for their future career choices. Most of the other subjects listed in the "top twelve" choices also had relatively direct links to possible future work (Hipkins and Vaughan, 2002b). However, when students were asked to name other subjects they would like to take if the school offered these, a number of suggestions seemed to relate more to personal interests and needs. We decided to try to tease out the nature of these influences. If students said they needed a subject "for my future plans" they were again asked to indicate the type of plans they had in mind by choosing from the following:

For the job I want to do.
For my future study.
For my travel plans.
For my personal life skills.

Satisfaction with choices made

In 2002 we asked students to respond to a rating scale that measured their perceptions of their school's helpfulness with their subject choices. The patterns generated indicated a degree of ambivalence about how helpful each school had been (Hipkins and Vaughan, 2002a, 2002b). However, the cross tabulations we ran did not yield any meaningful links that could explain the sources of any implied dissatisfaction. In 2003 we redesigned this section of the student questionnaire to try to link any expressed dissatisfaction to actual reasons for unhappiness with their choice of specific subjects. A fourth checklist was designed for this purpose. Where students expressed dissatisfaction they were asked which of the following would make them happier:

Changing to another subject altogether.
Changing to another teacher.
Changing classes to be with my friends.
Doing more practical (hands-on) work.
Doing less practical (hands-on) work.
Having more interesting learning activities.
Having less assessment pressure.
Getting more support from teachers for my learning in class.
Having more obvious links to everyday things that interest me.
Other (*please specify).*

© NZCER

Limitations

We asked students to repeat the checklist process for each of their subjects. While this made for a long questionnaire (*see* Appendix A) we anticipated that respondents would speed up once the format became familiar. This did happen but it became evident that some students were less thorough in making their responses to the final 1 or 2 subjects. Additionally, some students made it clear at the time of the questionnaire completion that the idea that they might choose a compulsory subject annoyed them: “But I have to do it, it’s compulsory.” While we saw the choice as a matter of deciding on the appropriate options, these students saw no choice at all!

The data analysis process

Completed questionnaires were collected on the day of the school visit. Each questionnaire was assigned an individual number. School identification, subject choices, and the checklists described above were pre-coded for rapid data entry. Responses to open-ended questions were hand-coded for identified themes. In 2002 we found a notable similarity of patterns in students’ perceptions of their choice making across the 6 schools and most results were collated for reporting. The data have again been collated across the 6 schools in 2003.

It should be noted that the selected schools form a group of case studies rather than a random sample. All reporting is done with respect to these 6 schools as specific Year 11 and Year 12 student populations. No statistical inference can be drawn from these particular schools about the populations of Year 11 and Year 12 students in general. However, the schools were chosen to represent a cross-section of New Zealand schools of average roll size, and therefore may give an indication of the subjects “typical” Years 11 and 12 students in “typical” schools tend to take, and why and how they make their choices about these subjects.

Contingency tables, chi-square statistics, and independence

In the analysis of the data, contingency tables and chi-square statistics have been used to identify associations between variables. An important prerequisite for a chi-square test of this nature is that observations are independent. However, for some variables we have observed there are differences in the response frequencies of the individual schools. For those variables where such differences exist the assumption of independence of observations does not hold. Since contingency tables only test for associations between 2 variables at a time, some of our tests have not been able to take account of a school variable that is known to differ to some degree and still compare 2 other variables of interest. With this limitation in mind, we have made cautious use of contingency tables to identify some strong patterns of response, and associations between variables about attitudes to, and reasons for, subject choices across the 6 case study schools. Future in-depth statistical analysis of this data could be undertaken using log-linear models or logistic regression to account for the school effect.

© NZCER

Response rates

As was the case in 2002, students who were present when the questionnaire was administered were told they could decline to take part and some chose to do so. Other students were not present at school at the time. The following tables compare response rates at the different year levels in each school. Student numbers are based on the 2003 April 1 roll returns. Data was collected in late April–early May at which point there may already have been some changes in the roll numbers at the various schools.

Table 1 **Response rates to Year 11 student questionnaire (2002 and 2003)**

	Year 11 student cohort			
School	**No of 2003 students**	**No of 2003 responses**	**% response 2003**	**% response 2002**
City A	165	143	87	68
City B	253	208	82	67
City C	197	176	89	56
Town D	189	98	52	66
Town E	217	165	76	93
Town F	138	122	88	88

Average 2003 response rate = 79 percent. Average 2002 response rate = 73 percent.

The response rates were considerably higher than the 2002 rates in 3 of the 4 schools where staff administered the questionnaire during a period of class time (Schools A, B, and C). The response rate was lowest in the 2 schools where students completed the questionnaire in a setting such as the school hall (Schools D and E) although this was not the case in the 2002 year when the same methods were also used in each of these schools. The response rate from students in School F did not change.

At Year 12 the response rate was lower overall. Comparisons with the responses made by this cohort in 2002 when they were in Year 11 (last column of Table 2) show that in 4 schools the response rate is little changed from 2002. More students from school A's cohort responded in 2003. When we visited in 2002 teachers were very involved with industrial action related to the NCEA implementation. It may be that they gave the questionnaire completion process more support in 2003. Some of the Town School F response patterns suggested to us that a whole group of arts students may have been out of the school at the time the questionnaires were completed, or they all chose not to do the survey (*see* School F profile in Section Three). In another school, response rates suggested that just one of the Year 12 international students had completed a questionnaire (*see* School C profile in Section Three).

© NZCER

Table 2 **Response rates to the 2003 Year 12 student questionnaire**

	Year 12 student cohort			
School	**No of 2003 students**	**No of 2003 responses**	**% response**	**% response Year 11 2002**
City A	143	130	91	68
City B	198	133	67	67
City C	127	68	54	56
Town D	129	79	61	66
Town E	171	148	87	93
Town F	105	62	59	88

Average 2003 response rate = 70 percent

It is likely that these differences in response rates have introduced a degree of bias in the data that we cannot track with any clarity. If there are similarities within a school, or across schools, between the students who did not respond, then the data we report will be more representative of the “type” of student who did respond.

© NZCER

Section Three

The 2003 year in the six schools

Introduction

This section updates information about school contexts for each of the 6 schools. It provides a 2-page profile of the subject-choice context in each school in 2003. Each profile notes changes in the context of the school, and summarises the principal's and staff's views about the school's ability to meet Years 11 and 12 students' learning needs in 2003 through the subject choices offered. (2003 was the first year of the implementation of the level 2 of the NCEA qualification). The 2002 *Learning Curves* report (Hipkins and Vaughan, 2002a) provided a description of the timetable structure in operation at each school, and that detail has not been repeated in this report. We found few changes from 2002 to 2003 in personnel we interviewed in the 6 schools, although we interviewed more deans in 2003.[2]

Key findings of this section

All 6 schools made at least some changes to the overall mix of Year 11/12 subject choices offered in 2003, juggling timetable and resources constraints in order to do so. An element of unpredictability in patterns of student demand for some courses was mentioned in 3 schools.

All the principals and most HODs were supportive of the NCEA changes, seeing these as allowing the school to better meet the learning needs of students, and motivating those students who were now experiencing more learning success than in the past. Some concerns specific to the context of each school were expressed, with no overall pattern emerging.

In 4 of the 6 schools, overall staff ratings of the school's ability to meet students' needs registered a slight positive shift from 2002 to 2003. Overall ratings remained the same in the other 2 schools.

---

2 Tables summarising staff ratings of the school's ability to cater for student subject-choice therefore show more responses for 2003 than for 2002.

© NZCER

City School A

The school context

City School A is a decile 6 inner city, girls' school. Although it is located close to the heart of an urban area, most students who attend are drawn from a range of surrounding suburbs. The student population is ethnically diverse and includes some students whose families have recently come to New Zealand, as refugees, or as immigrants, especially from Pacific nations. Students come from homes that span the full socio-economic spectrum and the school works hard to try to meet the wide range of subject-choice needs generated by this very diverse population. For more detail, *see* Hipkins and Vaughan (2002a).

Data gathering in 2003

We spoke with the HODs of English, mathematics, science, and technology, and with the principal, all of whom we interviewed in 2002. The arts HOD was not available for interview on the day of our visit. We interviewed the Year 12 dean, whom we had also interviewed as Year 11 dean in 2002, and Year 11 dean for the first time. Student questionnaires were administered to Year 11 and Year 12 students during a nominated period on the day of our visit, by the teachers who happened to be with those classes at that time.

One year on…

One year on, the principal of City School A continued to express concerns about the current policy focus on meeting student learning needs via varied learning pathways, seeing this as "a politically correct way of streaming". While she recognised the positive motivation that comes with experiencing success, her preference was for students to experience at least some mixed ability classes where students are exposed to role models for coping with more advanced learning. Rather than the changes within individual subjects, it is the possibility that students will take a complete course of subjects with less demanding learning challenges that particularly concerned her.

The HODs of both English and mathematics had used the level 2 implementation to make changes to the courses they offered at both Years 11 and 12 to better meet their students' learning needs. Despite her reservations about streaming, the principal acknowledged that some students were coping better with the targeted learning, in some cases for a smaller number of assessment credits, that characterises these courses. The "intellectualisation" of technology, which we described last year (Hipkins and Vaughan, 2002a) also remained a concern. The principal felt that achievement in the technology subjects was too hard for the students who traditionally take them. "It's all

© NZCER

pretty highbrow for our kids." The HOD of technology noted that the school was planning to introduce a contextually-focused[3] technology course next year to meet this need.

The principal also identified a need for more business-related alternatives, especially for students who find economics and accounting too difficult. The school was planning to introduce a course based on the *Young Enterprise* scheme at Year 12 in 2004 to meet this need.

Staff ratings for the school's ability to cater for Year 11 student subject-choice clustered around the "very well" level, as shown in Table 3 below. The pattern showed a slight positive shift from 2002. The person who responded with the "fairly well" rating was very aware that timetable constraints prevented endless flexibility, noting that "changing things at one level ripples through to other year levels". Another HOD noted that restrictions on the number of specialist rooms available (e.g. workshops and laboratories) precluded course proliferation in subject areas that required these (*see* Hipkins and Vaughan, 2002a, for an analysis of the nature of those constraints).

Table 3 **Staff ratings of City School A's ability to cater for the subject-choice needs of Year 11 students**

	Extremely well	Very well	Fairly well	Not very well	Not well at all
2003	2	4	1		
2002	1	4	2		

One HOD said that while the directive to choose 6 subjects kept choice wide for all the Year 12 students, the cost in terms of their workload and the accompanying "NCEA stress" worried her. She noted that "everyone has rigour in everything" and that some students needed at least 1 or 2 interesting courses where there was no assessment pressure. Another HOD noted that adjusting assessments rather than providing new courses was a good way to accommodate a wider range of student learning needs.

The deans expressed continuing concerns about the range of options available for lower-achieving students. The Year 12 dean reported some timetable clashes for some students, and also that the one alternative English class at Year 12 (*see* Section Three) was oversubscribed, so not all students who wished to could get a place in this course. Paradoxically, some more able Year 12 students found it hard to whittle their 2003 choices down to just 6 courses.

3 See the introduction to Section Seven for a discussion of the nature of the courses to which we have given this name in order to differentiate them from courses we have named "traditional-discipline" or "locally-redesigned".

© NZCER

City School B

The school context

City School B is a decile 8 co-educational city school with a diverse student population. It is a non-uniform school that attracts students from all over the city who are seeking a progressive environment and wide subject choice, as well as those who live nearby. The students are from a wide range of ethnic backgrounds and there are a number of exchange and fee paying students. City School B also caters for some refugee students who have very little English as yet. Some adult students attend the school and they are interspersed throughout the senior classes.

Data gathering in 2003

We spoke with the HOFs[4] of English, mathematics, science, technology, and the arts, and with the principal, all of whom we interviewed in 2002. We also interviewed the Year 11 and Year 12 deans for the first time. Student questionnaires were administered to Year 11 and Year 12 students during a nominated period on the day of our visit, by the teachers who happened to be with those classes at that time.

One year on…

In 2002 we reported a high level of support for the NCEA changes at City School B (Hipkins and Vaughan, 2002a). With extensive experience in using unit standards for assessment, the school had been "waiting for" such a change and staff were quick to take advantage of the opportunities that had opened up. Overall, the school offered more subject choices at Year 11 than the other 5 *Learning Curves* schools, and took pride in the wide range of alternatives for less able students. Initially, the principal was disappointed that this commitment did not translate into the anticipated pattern of student achievement in 2002. The school had a higher level of "not achieved" results than the national average. However, it was subsequently found that some of these results were awarded in error to students who had not actually entered for those standards.

The school roll had expanded sharply in 2002 and this had created huge challenges for accommodating the learning needs of all the senior students in 2003. The Year 11 dean noted that there were 50 new students in her overall Year 11 cohort of 250 students. The result of the influx was less flexibility to accommodate late changes where these were requested.

Staff ratings for the school's ability to cater for Year 11 student subject-choice are shown in Table 4 below. There were 2 more respondents in 2003. As in City School A, the pattern showed a slight positive shift to the responses made in 2002.

---

[4] Curriculum leaders are called "Head of Faculty" in this school.

© NZCER

Table 4 **Staff ratings of City School B's ability to cater for the subject-choice needs of Year 11 students**

	Extremely well	Very well	Fairly well	Not very well	Not well at all
2003	1	7			
2002	1	4	1		

In 2002, the principal envisaged that the school would move towards a modular "semester" type of structure at the senior level, more in line with the university course model (Hipkins and Vaughan, 2002a), a vision she reiterated in 2003. One HOF endorsed this vision, saying that the school was moving towards a "portfolio" approach which would provide a "more holistic way to approach learning". In her view "the more we get to know the NCEA subjects, the better we'll do it" [develop appropriate portfolios of courses].

The school was on the way to achieving this goal, with considerable freedom of movement across the senior year levels. Of the 6 schools, City School B offered the widest range of potential course options in this regard in 2003.

Comments made by the HOFs gave a qualified endorsement to the variety of subjects on offer. One saw the increase in flexibility as positive but worried that some Year 12 students would leave school having chosen options that did not give any "rigour" to their learning. This would be a "waste of talent" if they then went on to certain types of polytechnic courses. In a similar vein, another HOF worried that there was perhaps too much choice.

As they did in 2002, the school staff worked hard to ensure a strong information base for students to draw on when making choices. Every year, the school produces a printed course selection book that details the assessment standards used for every course. Year 10 students are given several school periods to use the "Career Quest" ICT materials before they make their Year 11 choices and all students are interviewed by a dean or senior teacher. The school has an enrolment week when all senior students must get course approval from HOFs for all their courses, before they visit the dean to discuss career pathways. One HOF worried that some ESOL students were still overestimating their ability and so they needed to complete courses twice, the first time just to acquire the language they needed.

The deans both commented on a degree of unpredictability in student demand for certain courses. In 2003, the level of demand for courses in digital media and food technology had taken the timetablers by surprise. One HOF commented on the need to work closely with students to help them prioritise amongst the many potential pathways available, and another noted that the ability to study at multiple levels created management issues for staff trying to keep track of each individual student's progress.

© NZCER

City School C

The school context

City School C is a decile 2 co-educational school with a diverse student population. It is suburban and students attend from a range of surrounding areas, from upmarket new housing subdivisions to long-established state housing areas. The school has a significant number of Mäori and Pasifika students.

Data gathering in 2003

We spoke with the HODs of English, mathematics, science, and the arts, and with the principal, all of whom we interviewed in 2002. We also interviewed 2 technology teachers who were not new to the school but gave different perspectives from the technology teacher interviewed in 2002.[5] As in 4 other schools, we interviewed the Year 11 and Year 12 deans for the first time. Student questionnaires were administered to Year 11 and Year 12 students by nominated teachers in several periods on the day of our visit.

One year on…

One year on the principal of City School C was happier about the range of choices the school was offering to meet the needs of different students, although she felt they could still do more. She would like to see a range of creative options that include semester or even single-term courses, some with a focus on topics of great interest to the students. Their *Rock Quest* preparation, for example, could become a one-term course. She would also like to see single-term courses in basic literacy and numeracy because some 2002 students only missed gaining the minimum number for an NCEA award by 1 or 2 credits. Staffing and timetabling issues were seen as constraints to fulfilling these wishes although the school was considering moving to a 6-subject timetable in 2004, for those students who could cope. (In 2003 all students chose 5 subjects.)

In this low decile school the cost to students' families of the NZQA registration fees was a concern. The principal noted that subsidies for low-income families, recently announced at the time when we visited the school, would be a help. She also saw cost reduction as a good reason to limit the number of credits offered in each course. The direct costs of implementation were also a concern. Her "conservative" estimate was that the school needed to budget an additional $27,000 to cover factors such as teacher release for training, relievers for teachers during practical examinations, a better computer for the teacher with responsibility for exchanging data with NZQA, and the large amount of photocopying generated.

The school's Board of Trustees had been very supportive of the NCEA implementation. There was a teacher-only time from 8.30–10.00 on Wednesday of each week. Staff used this time for

---

[5] Each school nominates the curriculum leaders in the 5 subjects who will take part each year.

© NZCER

planning, moderation meetings, and other NCEA-related tasks. This arrangement was to continue in 2004.

The overall pattern of staff ratings for the school's ability to cater for Year 11 student subject-choice remained more cautious than those made in the other 5 schools. However, staff now rate the school as able to cater for student subject-choice "very well", although one person revised their rating downwards from last year.

Table 5 **Staff ratings of City School C's ability to cater for the subject-choice needs of Year 11 students**

	Extremely well	Very well	Fairly well	Not very well	Not well at all
2003		5	3		
2002	1		3	1	

In 2002, some staff felt that senior students needed more guidance with their subject choices (Hipkins and Vaughan, 2002a). Several teachers noted that, in 2003, students had been placed in the option seen as most appropriate for their learning needs in the compulsory subjects and there appeared to be less concern about whether productive choices had been made within the optional subjects. One HOD said there was still parent and peer pressure for students to choose traditional-discipline options, but with guidance they were choosing subjects in which they could experience learning success.

In 2002, the principal was concerned that the school was not offering a sufficiently wide range of options for non-academic students (Hipkins and Vaughan, 2002a, p.46). The school had acted to change this situation in 2003, with 5 new courses being offered at Year 11. Three of these were alternatives to existing courses (accounting, information management, and science). They were internally assessed by unit standards rather than by achievement standards. Liberal studies was a new course, as was a technology course in fabrics.

The principal noted that changes to the 2003 timetable basically represented shifts between "the proportions of academic and vocational courses" that the school could offer. Two HODs noted that bigger junior classes were the price to be paid for offering a range of smaller option classes — a staff juggling act that was mentioned by at least one person in most of the schools. One HOD noted that a shortage of space in specialist rooms can limit the amount to time that is offered to Year 9 and 10 students, and they are then less likely to choose these subjects at the senior level. As in City School B, the arts HOD felt that arts subjects were not seen as having the status of more "academic" subjects and so some students who could achieve well in these areas were not choosing them.

© NZCER

Town School D

The school context

Town School D is a decile 5 co-educational school set in a medium-sized town that services the surrounding farming community. Students attend from both town and country areas. One staff member expressed the view that the school "has to be all things to all students" – it is the only secondary school in the town. Students span the full ability range and the school is proud of its innovative approach to catering for the needs of all students while offering a full range of traditional-discipline subjects.

Data gathering in 2003

We spoke with the HODs of English, mathematics, science, technology, and the arts, and with the principal, all of whom we interviewed last year. We interviewed the Year 11 dean again and the Year 12 dean for the first time. Student questionnaires were administered to the Year 11 students during one period when they came to the school hall. This procedure was also followed for the Year 12 students in another period.

One year on…

One year on, the principal of Town School D remained supportive of the NCEA implementation. For him, offering the level 2 achievement standards in 2003 rather than sticking with Sixth Form Certificate was "not a choice" and full implementation at level 2 had proceeded. The principal had budgeted to ensure that every staff member could have 4 non-contact periods so that the implementation workload would be somewhat eased. He expressed the view that every staff member should have level 2 training, regardless of whether they were actually teaching at Year 12 in 2003, and he regretted that training for this level was not available "a year sooner".

The school continued to take pride in the wide range of choices offered to students in Years 11–13, although the principal felt that the school still needed more alternatives for unmotivated students at Year 11. He noted that the availability of STAR and Gateway funding had been an important support for introducing alternative courses at Year 12 even where student numbers were small (Vaughan and Kenneally, 2003). However, in his view, unmotivated Year 11 students may not be suitable to send to such courses, especially if they also exhibit behavioural problems.

The principal noted that the biggest change was in the number of students opting to take newer versions of the compulsory subjects (*see* Section Seven for details), with unexpectedly high student numbers in such English classes. Like the principal of City School A, he was opposed to the streaming of students and was concerned about the potential for this to happen in the NCEA context.

With a wide range of courses on offer, the school had a stated aim of adding no new subjects to the timetable unless a corresponding number were removed. The principal believed that to add

© NZCER

more would simply be to exacerbate existing tensions for timetabling and resourcing courses (Hipkins and Vaughan, 2002a). Several HODs also noted that these factors limited what could be provided. Unsurprisingly then, the gross changes in subjects offered in 2003 were few, with some minor redistribution of courses across curriculum areas.

Staff ratings for the school's ability to cater for Year 11 student subject-choice were generally positive in 2002 and were even more so in 2003 as shown in Table 6 below. As they had in 2002 (Hipkins and Vaughan, 2002a), several HODs noted that the smaller sizes of some option classes had to be counterbalanced by larger classes in core subjects. There were consequences for students' learning and for teachers' workloads associated with this ongoing challenge.

Table 6 **Staff ratings of Town School D's ability to cater for the subject-choice needs of Year 11 students**

	Extremely well	Very well	Fairly well	Not very well	Not well at all
2003	4	2	1		
2002	2	3	2		

The principal and one HOD noted that students who did not get sufficient credits to move on to Year 12 in specific subjects were not necessarily choosing to repeat Year 11 as students might once have repeated their School Certificate year. Rather, they were adopting a range of alternative strategies at Year 12 that included some targeted repetition of Year 11 courses, within a Year 12 programme. The principal and HOD saw this flexibility as making for more positive attitudes to learning for lower-achieving Year 12 students than was the case in the past. The Year 12 dean also commented on this pattern, noting that students were avoiding a feeling of repetition when they could move up to an overall Year 12 course, and they were not then exposing incoming Year 11 students to behavioural problems.

Another HOD noted that it was good to have some alternative courses for students at Year 12 if they had not succeeded at Year 11 despite working hard. However, one HOD pondered that there might be too much choice at Year 12, saying that students "can't do everything".

As in City Schools B and C, the HOD of technology noted the academic/vocational differentiation made by many people was an ongoing restraint on the numbers of students who had chosen to study in this curriculum area. However, the HOD also noted that the Gateway initiative was "very successful in a rural town": a view endorsed by another HOD.

Town School E

The school context

Town School E is a decile 7 boys' school. It is set in a prosperous town, surrounded by intensive horticultural developments that provide a significant source of local employment. For many

© NZCER

people, living in this area is a lifestyle choice. While many students will remain in the area when they leave school, others will head for cities where they can gain university qualifications.

2003 data gathering

We spoke with the HODs of English, mathematics, science, technology, and the arts, and with the principal, all of whom we interviewed in 2002. Because of a miscommunication when the visit was arranged, the Year 11 and Year 12 year group leaders were not available to be interviewed. In any case the principal noted that advice and guidance was centralised within the Careers and Transition department, and that form teachers were being trained to give advice to support this role. Student questionnaires were administered to the Year 11 students during one period when they came to the school hall. This procedure was repeated later in the day for the Year 12 students.

One year on …

One year on, the principal of Town School E remained firmly committed to the vision of offering students opportunities to gain a range of national certificates via the judicious use of both unit and achievement standards, but more particularly unit standards. He pointed out that a national certificate that has been built from unit standards can be rebuilt in new ways when circumstances change. He reiterated his concern with the use of language that reinforces a false divide between "academic" and "vocational" subjects. As society and the economy have changed, subjects such as computer studies that were once considered "skills" have become very academic and he expected such change to be ongoing.

In 2003 the school offered 14 national certificates. The principal acknowledged that keeping parents and students up to speed with choices and options was a huge challenge. He was concerned about the perception that achievement standards are superior to unit standards and he wanted to see NZQA do more to "address this issue robustly". While the Year 11 traditional-discipline course in mathematics continued to be largely assessed with unit standards, both English and science now assessed their courses with a range of achievement standards. Comments from HODs reflected the pressure they had felt from parents and students to make the change. We further discuss this issue in Section Six.

In this school the English and PE departments had opted to continue with Sixth Form Certificate at Year 12 for 2003. All other subjects were being assessed for a level 2 NCEA award.

The school continued to broadly stream students for their core subjects at Years 11 and 12, with a range of options provided to meet the needs of the different groups of students (*see* Section Seven). Two of the HODs of these core subjects described this process as working well for most students, with "fair and transparent" methods of assigning students to the various alternatives. However, both HODs also acknowledged that for a few students at the cut-off boundaries, the selection process was less positive – in the words of one HOD they could feel "hard done by".

© NZCER

In 2003 there were minor changes in the timetable at Year 11. At Year 12 there were more science options offered than at any of other 5 *Learning Curves* schools. The principal and several HODs noted that timetabling issues constrained the amount of variation that could be offered overall. As options within the core subjects increase, flexibility to make changes elsewhere reduces. One HOD described the process of minimising timetable clashes as “an annual challenge”. Another HOD noted that the current booming employment market in the town was an incentive for some students to leave school earlier than they should, resulting in a loss of students at Year 12 that impacted on the range of courses that could be offered. One HOD identified Asian students as a group whose needs were hard to meet, noting that as “visitors” to the country, they were not always motivated to study hard.

Staff ratings for the school’s ability to cater for Year 11 student subject-choice are much the same as they were in 2002, as shown in Table 7 below. One HOD did not give a rating.

Table 7 **Staff ratings of Town School E’s ability to cater for the subject-choice needs of Year 11 students**

	Extremely well	Very well	Fairly well	Not very well	Not well at all
2003		4	1		
2002		6			

The principal noted that the NQF environment facilitated the wide range of opportunities that could be offered to less academic students at Years 12 and 13, although this flexibility also required them to choose carefully to keep clear pathways open. One HOD described links to the local polytechnic as working well to provide clear pathways in his curriculum area. Another HOD expressed concern that the school needed better tracking systems to ensure that students did have a clear idea of the pathways they are following. A third HOD said he felt students sometimes used “spurious logic” in choosing courses – for example, that the subject was easy, that mates were doing it, or that there was an attached field trip.

Town School F

The school context

Town School F is a decile 5 co-educational school set in a small rural community and serving several other nearby small rural communities. Horticulture, fishing, and tourism are central to a local economy that relies on a semi-skilled local labour market as well as semi-skilled itinerant workers, often from overseas. There is a flourishing arts community in the local area and the school prides itself on its good reputation in the visual and performing arts.

© NZCER

2003 data gathering

We spoke with the HODs of English, mathematics, science, technology, and the arts, and with the principal, all of whom we interviewed in 2002. We also interviewed the Year 11 and Year 12 deans for the first time. Student questionnaires were administered to Year 11 and Year 12 students during a nominated period on the day of our visit, by the teachers who happened to be with those classes at that time.

One year on…

One year on, the principal of Town School F has mixed feelings about how well the school catered for all the learning needs of all the 2002 Year 11 students. While the more academic students did reasonably well, another group was seen to be at risk because they were harder to keep motivated and focused (Hipkins and Vaughan, 2002a). Some of this group had left school at the end of Year 11 to drift into unskilled work. Such students had a need for alternative pathways but, while subject-choice does open up somewhat at Year 12, some staff still felt they may need more prescribed courses with less choice and closer monitoring (Hipkins and Vaughan, 2002a). While the deans advised them to try to keep doors open as they made their subject choices, many students did not know what they wanted to do when they left school and few aspired to go to university.

During 2003 the staff were to undertake a review of the senior curriculum that might help address these concerns. However, designing 2-year level 1 courses, a solution that has been successful in City School A, for example, might not work here because many Year 11 students will not stay at school for another year.

The principal thought that teachers had become more skilled at using assessment data to improve learning. However, some students were taking longer than desirable to recognise what was required of them in the new regime and many did not keep good track of the credits they had earned in 2002. In a survey of 2002 Year 11 students conducted by the school during Term 3 of that year, 80 percent of the responding students said they did not know how many credits they had achieved thus far.[6] The teachers recognised that they needed to continually monitor this aspect of students' progress with them.

The principal noted that the school still struggled with timetable clashes and that the small size continued to constrain the variety of subject choices that could be achieved. Senior classes with very small student numbers were again using The Correspondence School in 2003.

Staff ratings for the school's ability to cater for Year 11 student subject-choice is shown in Table 8 below. While there were more respondents than in 2002, the small positive shift was generated by staff who were interviewed that year. Two HODs shifted their ratings up to the "extremely

6 Since this data came from the school's own survey, and we did not ask students this question in our subject-choice survey, we cannot make any comparisons with other schools.

© NZCER

well" position, with one saying that the school was in a better position to meet parental expectations with the courses that combined unit and achievement standards now being offered. On the other hand, one HOD who continued to rate the ability to meet subject-choice needs at "fairly well" commented that the learning pathways right through the school would not be well co-ordinated until the senior curriculum review had been completed.

Table 8 **Staff ratings of Town School F's ability to cater for the subject-choice needs of Year 11 students**

	Extremely well	Very well	Fairly well	Not very well	Not well at all
2003	2	2	3		
2002		2	3		

In Town School F, the smallest of the *Learning Curves* schools, several options which were initially offered did not run in 2003. Economics was not offered as an option at either Year 11 or Year 12 and the Year 11 social studies course did not run because too few students opted in.

When asked to comment on the school's ability to cater to subject-choice at the Year 12 level, several HODs described accommodations they had made personally to help students circumvent timetable clashes. The general feeling was that they were doing their very best, taking into account the small size of the school. One HOD noted that there were sometimes tensions between the deans and the HODs when students are encouraged by the deans to make "trade-off choices" that could result in some senior classes becoming marginal in numbers.

© NZCER

© NZCER

Section Four

Patterns in the range of subject choices

Introduction

The range of assessment options opening up in the NCEA regime potentially allows schools to redesign any number of new courses to meet students' perceived learning needs. However, the school profiles highlight the organisational[7] constraints that preclude unlimited expansion of subject choice. Such constraints include the ability to deploy and pay for the staff required, with the associated need to maintain average class sizes within an affordable range. The 2002 report (Hipkins and Vaughan, 2002a) also discusses the manner in which current secondary school timetable structures, with their limited number of option lines, constrain choices. Within these constraints, the 6 schools had creatively addressed the need to cater for students with a wide range of learning needs in 2003.

This section begins by summarising the numbers of options and subjects offered at Years 11 and 12 in the 5 curriculum areas that are the focus of this study. Single-page overviews of the Years 11 and 12 subjects then offered in each school support this summary. The views of the deans, who are so instrumental in providing subject-choice guidance in most of the schools, are then reported, and issues raised by patterns in their responses are discussed.

Key findings of this section

All schools offered slightly more subject-choice at Year 11 than at Year 12. Across the 6 schools, the total number of subjects offered ranged from 27–36 at Year 11 and 29–39 at Year 12. Choice was effectively expanded when students were able to study courses at different year levels. This increased the range from 27–53 at Year 11 (there was no change in one school) and from 36–61 at Year 12.

As in 2002, at Year 11 all 6 schools continued to offer 2 types of English and 5 of them offered 3 types of mathematics. The sixth school offered 2 types of Year 11 mathematics.

[7] In Section Seven we will suggest that there are also other types of constraints in operation, in particular those related to traditional perceptions of how school subjects should be constituted and taught.

© NZCER

Five schools offered 2 types of mathematics at Year 12 and the other school offered 3. Year 12 options in English were expanded by the inclusion of media studies in 4 schools, and in one school students could choose to study te reo Mäori instead of English.

As a general pattern, the widest range of subjects within one curriculum area was offered within technology.

Schools differed in the areas in which they provided the widest range of choices within specific curriculum areas. City School A provided the widest range of languages at both year levels, City School B the widest range of technology courses at both year levels, and Town School E the widest range of science choices at Year 12.

Year 11 deans focused on what students would most enjoy when advising students on course choices. Year 12 deans were more likely to encourage students to look ahead to pathways beyond school.

For Year 12 deans, uncertainties about university entrance requirements were making the provision of clear advice more difficult.

The patterns of subject choices offered

Overall numbers of courses offered in the 5 curriculum areas included in the study are summarised in Table 9 below. As in 2002, all 6 schools continued to offer 2 types of English and 5 of them offered 3 types of mathematics at Year 11. Five schools offered 2 types of mathematics at Year 12 and the other school offered 3. Year 12 options in English were expanded by the inclusion of media studies in 4 schools, and in one school students could choose to study te reo Mäori instead of English. All schools offered a wider range of choices at Year 12 than at Year 11.

Table 9 **Summary of subject-choice numbers in 5 curriculum areas**

Year 11 **School**	**A**	**B**	**C**	**D**	**E**	**F**
11 Mathematics	3	2	3	3	3	3
11 English	2	2	2	2	2	2
11 Sciences	2	3	2	4	3	3
11 Arts	3	3	2	3	3	3
11 Technology	4	10	5	6	5	7
Year 12						
12 Mathematics	3	2	2	2	2	2
12 English	2	4	3	3	3	2
12 Sciences	3	4	3	5	7	4
12 Arts	5	8	3	4	3	3
12 Technology	6	10	4	7	8	7

As in 2002, the widest range of subjects was offered within the technology curriculum area (although not all are subjects that are assessed using the technology curriculum – *see* Section

© NZCER

Eight). While all 6 schools had made minor changes in their mixes of subject options, none had yet begun to integrate across curriculum areas, although one school was considering this. Most schools remained concerned about the variety of optional courses they are able to offer for low or students. However, any further changes to the mix of subjects offered required considerable juggling of both timetable and staff. New subjects were more likely to be replacements than additions to the mix of subjects offered.

The availability of both Year 11 and Year 12 data for 2003 allowed us to identify the extent to which students' options were further expanded by the opportunity to study one or more subjects at a different year level. For example, some students were studying mathematics at Year 12 whilst in Year 11 classes for all other subjects. While only small numbers of Year 11 students were studying at Year 12 or 13 (and none did so in City School A), all schools had Year 12 students who were studying at Year 11 or Year 13 in some subjects.

Total numbers of subjects and options available are shown in Table 10. The numbers in brackets show the expansion of options[8] when 2003 students studied one or more subjects at another year level. Equivalent data were not available from 2002.

Table 10 **Summary of total numbers of choices taken at Years 11 and 12**

	A	B	C	D	E	F
Year 11 Totals	27	36 (53)	30 (32)	29 (31)	27 (30)	27 (34)
Year 12 Totals	36 (46)	45 (61)	29 (37)	39 (57)	37 (42)	30 (36)

The next 6 pages provide more detailed summaries of the subject choices made available in each school.

8 The same system is used to indicate expansion of total options in each school for Tables 11–16 on the following 6 pages.

© NZCER

Subjects offered at City School A

Table 11 **Summary of subject options available to students at Years 11 and 12 in City School A**

Curriculum area	Number of options offered in each area			
	Year 11 2003	Year 11 2002	Year 12 2003	Year 12 2002
English	2	2	2**	1
Mathematics	3	3	3 (** 2 options) ††	2
Science	2	2	3**	3
Languages	5	5	5**	5
Social sciences	3	3	6††	5
Arts	3	3	5	6
Technology	4	4	6	6
Health/PE/careers	1	1	2	1
Accounting	1	-	1**	1
Information management	1	1	1**	1
Careers focused	1	1	1	1
ESOL	1	1	1††	1
Totals	**27**	**26**	**36 (46)**	**33**

** Year 12 students taking subject(s) at Year 11.
†† Year 12 students taking subject(s) at Year 13.

Subject changes included the addition of a combined health/careers/PE course at Year 11 and Year 11 accounting, because assessment via level 2 achievement standards was seen to make it harder to pick up at Year 12. The alternative English course described in Section Seven was new at Year 12, as was a sports education/leadership course.

No Year 11 students reported taking a subject at Year 12 level. However, the choice of subjects at Year 12 was effectively expanded from 36 to 46 by the option to work at either Year 11 or Year 13. Some Year 12 students were taking either traditional-discipline or locally-redesigned level 1 mathematics options and one was studying calculus at Year 13 level. Some Year 12 students were studying French language at Year 11 level. One Year 12 student was studying the social science subject, geography, at Year 13 level.

City School A continued to offer the widest range of languages of the 6 schools. Several students took languages not offered in the school timetable (Spanish and German) through The Correspondence School.

© NZCER

Subjects offered at City School B

Table 12 **Summary of subject options available to students at Years 11 and 12 in City School B**

Curriculum area	Number of options offered in each area			
	Year 11 2003	Year 11 2002	Year 12 2003	Year 12 2002
English	2*	2	4**	2
Mathematics	2*	2	2 (** 2 options) ††	2
Science	3 (* 3 options)	4	4 (** 2 options)	4
Languages	4*	3	4††	3
Social sciences	4 (* 3 options)	2	5	6
Arts	3 (* 2 options)	3	8	7
Technology	10 (* 3 options)	5	10 (** 4 options) (†† 2 options)	9
Health/PE	3*	2	2	2
Accounting	1*		1	1
Information management	1*	1	1**	1
Careers focused	2	2	3** ††	3
ESOL	1	1	1	1
Totals	**36 (53)**	**27**	**45 (61)**	**41**

* Year 11 students taking subject(s) at Year 12.
** Year 12 students taking subject(s) at Year 11.
†† Year 12 students taking subject(s) at Year 13.

In 2003 there were 4 new Year 11 courses; accounting, economics, Mäori performing arts and a combined health/physical education course. One science course (alternative horticulture) was dropped. It became compulsory for Year 11 students to choose one of straight PE, the PE/health combination, or recreation. Year 12 subjects being taken by Year 11 students included: biology, chemistry, and physics; history, economics, and social studies; music and drama; food and nutrition; graphics and computer studies; and Mäori.

Three new courses at Year 12 were Mäori performing arts, food and nutrition, and a level 1 social studies course. A journalism and film and TV studies course increased the English choices at this level. Options being taken by Year 12 students included: Year 11 mathematics options, Year 13 calculus, either science or horticulture at Year 11; Year 11 graphics; food and nutrition; digital media; and computer studies. (The latter 2 were also being taken by some Year 12 students at the Year 13 level.) Japanese was the language being studied in a combined Year 12/13 class.

Technology remained the curriculum area with the widest variation of courses offered. Both Year 11 and Year 12 students were studying Spanish through The Correspondence School.

© NZCER

Subjects offered at City School C

Table 13 **Summary of subject options available to students at Years 11 and 12 in City School C**

Curriculum area	Numbers of options offered in each area			
	Year 11 2003	Year 11 2002	Year 12 2003	Year 12 2002
English	2	2	3	3
Mathematics	3*	3	2 (** 2 options)	2
Science	2	1	3 (** 2 options)	3
Languages	4*	4	3	4
Social sciences	5	5	4	4
Arts	2	2	3	3
Technology	5	4	4 (** 2 options) ††	5
Health/PE	1	1	2††	2
Accounting	2	1	1	1
Information management	2	1	1	1
Careers focused	1	1	2	2
ESOL	1	1	1	1
Totals	30 (32)	26	29 (37)	31

* Year 11 students taking subject at Year 12 or 13.
** Year 12 students taking subject(s) at Year 11.
†† Year 12 students taking a subject at Year 13.

One Year 11 student was studying mathematics at Year 12 and 3 Year 11 students were studying Mäori at Year 13.

As in City School B, Year 12 options in English included media studies. A Year 13 course in media studies and drama was likely to be developed to continue the pathway for students taking these subjects at level 2. Some Year 12 students were taking Year 11 subjects including: mathematics in one or other of the options; science in one or other of the options; practical woodwork; and food or nutrition. One Year 12 student was taking Year 13 design/fabrics and one was taking Year 13 sports education/leadership.

Small numbers of students were enrolled with The Correspondence School in 3 low-demand courses – French, Japanese, and economics. One student reported taking “New Zealand Studies” – a special non-credit course offered to Year 12 and 13 international students. The school reported that there were actually 12 students taking this course, indicating that other international students may not have completed the Year 12 questionnaire.

© NZCER

Subjects offered at Town School D

Table 14 **Summary of subject choices available to students at Years 11 and 12 in Town School D**

Curriculum area	**Number of options offered in each area**			
	Year 11 2003	**Year 11 2002**	**Year 12 2003**	**Year 12 2002**
English	2*	2	3ϯϯ	3
Mathematics	3*	3	2ϯϯ	2
Science	4	4	5 (** 3 options)	7
Languages	3	3	3**	3
Social sciences	3	3	3 (** 3 options) (ϯϯ 2 options)	3
Arts	3	4	4 **	4
Technology	6	8	7 (** 3 options)	6
Health/PE	1	1	2	2
Accounting	1	1	2ϯϯ	1
Information management	1	1	2**	1
Careers focused	2	2	5**	6
ESOL			1	-
Totals	**29 (31)**	**32**	**39 (57)**	**38**

* Year 11 students taking subject(s) at Year 12.
** Year 12 students taking subject(s) at Year 11.
ϯϯ Year 12 students taking subject(s) at Year 13.

Changes in 2003 include the deletion of performance music and some consolidation of technology courses at Year 11. There was little multi-level course taking by Year 11 students, with small numbers studying English or mathematics at Year 12.

Media studies was an option choice for English at Year 12. An ESOL course was added, along with a new technology course. Year 11 subjects being taken by one or more Year 12 students were spread across the curriculum areas and included 3 Year 11 science options and 3 Year 11 technology options.

Calculus, statistics, English, history, accounting, and classical studies were the Year 13 subjects being taken by one or more Year 12 students in 2003.

© NZCER

Subjects offered at Town School E

Table 15 **Summary of subject choices available to students at Years 11 and 12 in Town School E**

Curriculum area	Number of options offered in each area			
	Year 11 2003	Year 11 2002	Year 12 2003	Year 12 2002
English	2	2	3**	3
Mathematics	3*	3	2** (†† 2 options)	1
Science	3 (* 2 options)	3	7	8
Languages	2	2	2	2
Social sciences	3.5	3.5	4	6
Arts	3	3	3	3
Technology	5	5	8**	6
Health/PE	2	2	4	5
Accounting	1.5	.5	1	1
Information management	1			
Careers focused			2	
ESOL	1	1	1	
Totals	**27 (30)**	**25**	**37 (42)**	**35**

* Year 11 students taking subject(s) at Year 12.
** Year 12 students taking subject(s) at Year 11.
†† Year 12 students taking subject(s) at Year 13.

In 2003, agriculture was combined with horticulture as one science option at both Years 11 and 12. At Year 11, economics and accounting became separate subjects but were also still offered as a combined subject. Text and information management (TIM) was introduced at Year 11, with substantial growth in this and the computer/media studies area.

For consistency with the format used for the other 5 schools, media studies at Year 12 was counted with English options although the school includes it in the Arts curriculum area, and electronics was counted with technology options although it is administered within the science department. More science options were offered than at any of other 5 *Learning Curves* schools and aquatic science was added in 2003. Food technology and design technology/metal subjects were introduced at Year 12. A tourism course was added and other STAR options made available.

The student(s) who reported taking Spanish were on The Correspondence School roll. Some subjects such as classical studies shared their teaching with the local girls' school because of the small student numbers. There appeared to be less mixing across the year levels than at any of the other 5 *Learning Curves* schools.

© NZCER

Subjects offered at Town School F

Table 16 **Summary of subject choices available to students at Years 11 and 12 in Town School F**

Curriculum area	Number of options offered in each area			
	Year 11 2003	**Year 11 2002**	**Year 12 2003**	**Year 12 2002**
English	2 *	2	2	2
Mathematics	3 * ††	3	2** ††	2
Science	3 (* 2 options)	3	4**	4
Languages	3 (* 2 options)	2	2	1
Social sciences	2	4	3	4
Arts	3	3	3**	4
Technology	7	7	7**	7
Health/PE	2	1	3	2
Accounting	1	1	1	1
Information management	1	1	1**	1
Careers focused			2	2
ESOL				
Totals	**27 (34)**	**27**	**30 (36)**	**30**

* 6 Year 11 students taking subject(s) at Year 12.
** 5 Year 12 students taking a subject at Year 11.
†† 2 Year 11 or 12 students taking a subject at Year 13.

No Year 11 students reported taking art, and no Year 12 students reported taking drama or art (except one student who said they were studying this at Year 11). We confirmed with the school that there was a class in each of these 3 areas, so we concluded we had struck a day when the students had been taken to an arts-focused event (Hipkins and Vaughan, 2002a).

In 2003, life skills was a separate course from PE at Year 11 and one or more Year 11 students were studying in Year 12 classes in English, mathematics, science, and physics. Two students from Year 11 and 2 from Year 12 were studying calculus at Year 13.

The school had a Gateways option at Year 12, which probably funded the "Horsemasters Certificate" course that some students reported taking. A sport and recreation course added a third PE option (also likely to be a STAR-funded course). Year 13 mathematics, science, art, IM, and computer studies were being taken by one or more Year 12 students.

Years 11 and 12 students studying Year 12 Spanish were enrolled with The Correspondence School, as were the Year 11 German students.

Helping students choose appropriate courses: the deans' perspectives

The overall situation presented by the individual school summaries is one of considerable choice. In this situation students' decisions may have compounding effects on their subsequent options.

© NZCER

In 5 of the 6 schools the deans were charged with the specific responsibility for assisting students to make these choices appropriately. We compared the comments made by the Years 11 and 12 deans in these 5 schools to check for commonalities in what they see as the most important factors for students to consider in making their subject-choice decisions.

Most of the Year 11 deans focused on encouraging students to choose subjects that would ensure they had an enjoyable and successful learning experience. This was more important to them than choosing subjects with any very specific future plans or careers in mind.

- City A's dean advised students to choose subjects they liked rather than opting for friends' or parents' choices. She said that "every subject can lead to a career".
- City B's dean saw "little urgency" in the choices made at Year 11, and believed that what students liked was more important. The dean didn't see this level of schooling as "contributing to the world and its works" and believed that "education is more important than training".
- City C's dean said that students needed to think about the "risk" involved in taking subjects that offer a minimum number of credits. This dean encouraged students to work out credit totals as part of the choice process.
- Town D's dean said that subject-choice "doesn't matter too much as long as they do well", and encouraged students to choose on the basis of their past subject history. In this dean's experience, not "liking" the subject drives the desire for changes at a later stage.
- Town F's dean said that a "broad base" of subjects was important and that students needed to choose subjects that matched their abilities.

For these deans it was important that students remained actively involved and experiencing enjoyment in their learning as they shifted into the senior secondary school. As Sections Ten–Twelve report, expectations that their learning would be enjoyable were also reported as factors that influenced the choices students made across the spectrum of curriculum subjects, both their optional choices and their selections of options within compulsory core subjects. One year further along the pathway to transitions beyond school, the Year 12 deans were more focused on pathways through and beyond the final years of secondary school.

- City A's dean advised students to frame their choices in terms of what they wanted to do after they leave school and said she sent students to the careers counsellor if necessary. In 2002, in her role as Year 11 dean, she made comments more aligned with those of the Year 11 deans reported above. Her focus appeared to have shifted as she moved up a year level with her student cohort in 2003.
- City C's dean said he discussed the future with students and he had "put many into polytech. courses". He always tried to look at the impact of choices on the "career path" of a student and to direct choices of non-compulsory subjects with this factor in mind.
- Town D's dean said that students need to keep learning pathways in mind, especially requirements for university entrance. She saw problems when Year 12 courses did not lead on

© NZCER

to Bursary[9] courses at Year 13, citing the example, of computing. This dean used careers advisers to help students where necessary.

- Town F's dean asked students to think about where their choices were "leading" and saw the need to keep "academic students on track" and "lower ability students realistic" in their choices. He said that parents' expectations needed to be tempered in this regard, especially in the choice of mathematics option. The dean was conscious of the impact of Year 12 choices on Year 13 pathways and university entrance requirements.
- City B's dean combined elements of all the above, saying it was important to watch that students didn't select a mix of "trendy" subjects which might preclude getting the necessary number of credits in "approved" subjects for university entrance at the end of Year 13. He checked the balance of unit standards and achievement standards in each student's courses to ensure they had the best chance of getting the credit total they would need.[10] However, echoing the focus of the Year 11 deans, he also believed students would do well in subjects they enjoy.

As the Year 12 deans attempted to look ahead to pathways beyond school, uncertainties in university entry requirements in the future caused them considerable anxiety. Amongst the issues that appeared to be unresolved at the time of the 2003 interviews were uncertainties about which of the following criteria will actually be used to determine entry to university courses, especially where places are limited:

- passes in particular achievement standards for entry to specific subjects;
- overall number of credits gained; or
- some other measure such as the number of excellence awards gained, as measured by the "grade average" (*see* Section Six).

Exacerbating these concerns was a worry that some Year 12 students were choosing not to sit all the assessments offered within the subjects they had chosen (*see* Section Five). While our findings in Section Four suggest that students may have a range of reasons for making such choices, including managing heavy workloads, this practice has been seen as laziness in some quarters. For example, the president of the Secondary Principals' Association (SPANZ) has recently called for universities to raise entry standards to keep students motivated to work hard (Feltham, 2004). The issue of keeping open pathways beyond school is one we will continue to monitor in 2004.

---

9 The Bursary examinations are being replaced by level 3 NCEA courses in 2004.

10 See Section Six for discussion of the belief that credits from (internally assessed) unit standards are easier for some students to achieve than credits from achievement standards, especially those externally assessed.

© NZCER

© NZCER

Section Five

The impact of the NCEA on students' learning

Introduction

In this section the collated views of the interviewed staff in the 6 schools about the impact of the NCEA qualification on student learning and achievement in general are outlined and key themes discussed.

Key findings of this section

The pattern of increased learning success for lower-achieving students, first reported in 2002, continued in 2003. Gaining credits early in the year boosted the confidence of these learners and some students who might have been expected to leave school chose to return.

There were mixed views on whether the "cabbage" pejorative had in fact broken down. Some teachers supported this view. Others felt the pejorative had shifted, or was in the process of shifting, to courses assessed primarily by unit standards.

Concern for higher-achieving students focused mainly on consistency of judgments made for specific standards. Some standards for "excellence" were set too high. Some judgments were based on "nit-picky" criteria.

The HODs share the deans' concerns about lack of clarity around pathways from school subjects to tertiary study.

New issues at Year 12 included a concern that some students had "burnt out" and were opting out of some assessments to manage their workloads, especially as they knew they only needed 60 level 2 credits to gain the level 2 NCEA award.

Countering this, some HODs reported that students were taking more ownership of their learning and managing their assessments better in 2003.

© NZCER

Comments about students' learning

The introduction of the NCEA in 2002 was seen to have a number of positive impacts for the Year 11 students whose learning was assessed for the new level 1 qualification at the end of that year. These included the school's ability to provide courses that catered for a wider range of student learning needs, and a possible lessening of the perception that certain types of courses were "cabbage" subjects because they did not lead to the same qualifications as other courses. The opportunity to address the long-standing divide between academic and vocational subjects also seemed to be opening up. Some drawbacks and negative impacts were reported, including the burden of increased teacher workloads, and a perception by some teachers and principals that the NCEA was leading to a new type of streaming (Hipkins and Vaughan, 2002a). We revisit most of these issues next.

The impact of the NCEA for low- or under-achieving students

In 2002 we reported that low- or under-achieving Year 11 students were seen to be the main beneficiaries of the new NCEA assessment regime, particularly as "vocational" options within core subjects could now be assessed for the same qualification as the traditional subject options (Hipkins and Vaughan, 2002a). That generally continued to be the case in 2003, with these benefits extending to the same group of students at Year 12.

The Year 11 dean and one HOD at City School A both commented on the positive impact of the NCEA on lower-achieving students who would not have gained School Certificate. The HOD commented that a wide variety of students from different ethnic backgrounds were now experiencing learning successes. The principal of City School C felt that the 2002 Year 11 assessment results reflected what the school's students knew and could do better than School Certificate results in previous years. She noted that a number of students who gained level 1 credits would never have passed School Certificate.

Countering these generally positive impressions, the "intellectualisation" of technology (*see* Section Eight) and the lack of pathways for "hands-on" practical subjects right through all 3 levels of the senior secondary school remained areas of concern for some HODs.

That "cabbage" pejorative

The HOF of mathematics at City School B said the "alternative" options (*see* Section Seven) were working well and they were no longer seen as "cabbage" courses. Both deans at Town School D commented on the improved achievement of students now that within-subject options are available in English and mathematics. One noted that some students in the contextually-focused Year 11 mathematics course achieved more credits than some in the traditional-discipline

© NZCER

mathematics course last year. The HOD of mathematics at City School A made similar comments. Her students' achievements are discussed more fully in Section Seven.

Countering this, one HOD at Town School F said that students saw achievement standards as superior to unit standards and that the "veggie" pejorative was still attached to students who study courses that were predominantly assessed by unit standards. In the perception of this HOD there was "pressure from the government" to use achievement standards wherever possible, although, in contrast to the principal of Town School E (*see* Section Three), he said parents' preferences were now for mixed courses where appropriate.

This HOD also noted that some students were returning to school after a time out doing manual jobs because they now realised the importance of getting qualifications. The HOD said it was possible to look at such students with "fresh eyes" and be supportive of their new aspirations because there were pathways they could follow. This is an interesting perspective in view of concerns expressed about students who leave Town School F early. The Year 12 dean felt it was better for such students to be at school where they could now choose from a range of "meaningful" courses, such as those offered through Gateway, as opposed to being at polytechnic doing "courses that take them nowhere".

The confidence boost of gaining credits

One City School B HOF noted that students gained in confidence when they had achieved a certain level of credits during the year, and were then more relaxed to do their best in the external examination. Another HOF commented that gaining credits during Term 1 encourages students because they "start with success". A HOD at Town School D also commented that students who would probably not have achieved School Certificate had achieved at least some credits in her subject. The additional funding provided by the Gateway initiative was seen by one HOD to ease staffing pressures, making reassessment easier to provide for students on the funded courses.

Several deans were also "really positive" about the impact of the NCEA on students' achievement. Two Year 11 deans commented that every subject now has at last some credits that students can work for. They both said that students preferred the chance to gain credits for parts of a course to the "all or nothing" award of previous qualifications. One dean noted that students in the contextually-focused English option often have strengths in units such as "static image" and "speech" that can help them gain their literacy credits. Also, each student's record of achievement for individual standards affords more transparency than the previous system, highlighting both subject strengths and limitations. The dean noted that the unrealistic expectations of some parents are tempered by this more detailed information, and that this helps the school to place students in appropriate courses.

© NZCER

The impact of the NCEA for high-achieving students

Although they saw some positives, staff in the 6 schools continued to have more concerns about the higher-achieving students. At this early stage of NCEA implementation, concern about where to set standards, and whether or not consistent judgments had been made about this, were by far the most common issues to be mentioned.

One City School B HOF saw the reintroduction of external examinations at Year 12 as a backward step. In her view, this restricted the creativity that was possible when designing courses at this year level.

Striving for excellence

One HOF at City School B felt the school needed to do more to promote excellence as a goal for more able students.

The principal of Town School E discussed ideas about working across levels within courses at some length. In his view, excellence at level 1 should really equate to achievement at level 2, and so on. He believed that teachers should be aware of the range of achievement expected across levels 1–3, regardless of the level at which they were actually teaching. With this awareness, they would become more skilled at recognising when students are actually working above or below the nominal subject level, so that "multi-level credentialling in the same classroom" would begin to happen. He acknowledged that this vision was complex, but he was excited by its potential and believed the teachers were growing more confident in their professional judgments.

Conversely, one science HOD worried that the manner in which standards for excellence have been constructed limits judgments to particular types of thinking skills. In his view, this has effectively narrowed the basis on which students are judged to have shown outstanding learning and some "switched-on guys" will never achieve this level because they work best in more practical, or more creative, settings.

One arts HOD who in 2002 expected assessment with achievement standards to "flatten out" achievement patterns said that this had indeed happened because "top performers get no credit if they go beyond the marking schedule". This HOD felt that assessment in the subject area was being dictated by a small group of teachers who are "not in touch with the needs of schools in the rest of the country". However, the HOD then went on to say he was "generally enthusiastic [about the NCEA] as long as it does not become a millstone". This type of comment seems to be indicative of the struggle to move thinking from a long-established norm-referenced framework, where a bell curve is constructed to distribute students along a ranked continuum of ability levels. By contrast, a quite different framework pertains for standards-focused assessment, with ability measured against predetermined standards, and high levels of achievement are not required to be "rationed" in the same way.

© NZCER

Making consistent judgments

Reservations about the 2002 judgments made for some externally assessed achievement standards were expressed by HODs in 4 of the 6 schools.

Staff responses to the survey at Town School F showed that only 8 teachers felt the students were achieving the results they expected. Four responded "maybe", and 9 teachers said students were not getting the results they expected. Reflecting on course content and assessment changes, one City School A HOD commented that it was hard to judge in advance which students would succeed with their level 2 learning in the NCEA environment.

Staff at Town School E went into the new NCEA regime already very experienced in the use of unit standards across the full curriculum spectrum. Because they were so practiced at making standards-focused judgments, there was a noticeable critical focus on the meaning of "excellence" amongst this group of HODs, as this had played out in the 2002 students' achievements. One of these HODs was surprised there were so few "excellence" awards in his core subject area. He believed that the standard was unrealistic, saying "where they drew the line was quite high". While the level 1 external examination results were otherwise what he would have expected from School Certificate, he noted that the NCEA was "definitely not dumbing down". Another HOD was surprised by wide variations in the distribution of excellence awards across the external standards of the subject, but noted that the distribution for the schools' students mirrored the national pattern. A third HOD felt that standards for excellence in a quite different type of subject were set far too high, leaving teachers in this subject area "pretty disenchanted".

The principal and one HOD of Town School D also commented on what they perceived to be the higher standards now needed to achieve in some subjects. The principal commented that some NCEA standards were too detailed, with too much content. He wondered whether fear of the "dumbing down" pejorative had led developers to trade off some of the potential learning gains in favour of "jamming in" content. The HOD said there was "pressure to be assessed all the time – even when you are breathing". Another HOD said that some standards required more work than others yet students achieved the same number of credits.

One City School C HOD expressed disappointment that students had experienced "pedantic" assessments in graphics achievement standards, and they had not achieved even though they had reached a "good standard overall". This HOD saw an element of capriciousness in the judgments made, observing that even experienced teachers couldn't anticipate the results that their students actually got. Similar comments were made for specific achievement standards in the compulsory subject areas – for example, for externally assessed trigonometry in mathematics (*see* Section Seven).

Pathways to tertiary study

One City School C HOD said that able students were concerned about their pathways to gaining places for university study. In her view the "ground is still shifting at the university end". She said that faith in the NCEA would be undermined if universities introduced their own entrance

© NZCER

examinations. As the Year 13 dean she was concerned about being able to give good advice to students in Years 11 and 12, and she did not feel she could have "total confidence" in the advice she had been able to give to Year 13 students either. One HOD at Town School D also expressed anxiety about pathways beyond school for the more academic students because of what she saw as uncertainties about entry requirements for university. As the discussion in Section Six demonstrates, this anxiety is impacting on teachers' thinking about issues such as reducing assessment loads the courses offered.

Other learning issues in 2003

Other issues began to emerge as the 2002 Year 11 student cohort continued on to level 2 of the new qualification in 2003. These are briefly outlined next.

Students' management of their learning

The principal of City School C noted that some of the school's more capable students were blasé about their internal assessments and they missed out on gaining these, which had been a "huge shock" for them. These students were allowed to go on to level 2 in 2003 and they were much more focused as a result of their experiences. Students who gained a level 1 NCEA award had been given an unsupervised study period whereas those who did not were supervised. The principal noted that this was very motivating for the students in the unsupervised group because the school has not allowed this situation before and the students "felt special".

One HOD from Town School F commented that students had to be prepared to take more ownership for their learning and to do more work outside class time. In his view, the 2003 Year 12 students were responding really well to this challenge, and were very positive about the NCEA. He said "success breeds success and they were successful last year". Another HOD noted that he was "seeing the best work I've seen in ten years of teaching. The goal posts are clearer and there are clearly defined standards."

One Town School E HOD also said there had been a "huge positive change" in students' motivation in 2003, with more students achieving learning success. This HOD felt that students were somewhat sceptical last year but could now see the benefits of gaining credits. However, another HOD thought that boys are not good at time management and that they "now have several panic attacks instead of one" [at the end of the year].

The potential for student burnout

Counterbalancing the positive comments made about increasing student self-management, staff in 3 of the 6 schools expressed concern about the potential for students to "burn out", especially at Year 12 when there was no lessening of the assessment pressures they had felt at Year 11.

© NZCER

During the 2003 interviews, most City School A teachers expressed concerns that students were becoming demotivated. Some thought the impact was felt most keenly by the more able students, especially in view of the school's policy that all students should do 6 subjects each year. These students were finding it more and more difficult to do justice to their study and to fit in extracurricular activities. Such was the level of concern that this issue was to be the subject of a staff meeting and the Year 12 dean discussed it at some length. She wanted to get a "better grip" on what was causing Year 12 students to stop working as hard as they did in 2002. Her impression was the students had realised they only needed 60 credits at level 2 because they could "top up" to a full level 2 NCEA award with 20 level 1 credits.

Instances where students had selectively opted out of their internal assessment events are reported in Section Six.

© NZCER

© NZCER

Section Six

Issues associated with the NCEA implementation

Introduction

In this section a range of principals', HODs', and deans' views on 4 issues identified by the researchers as of current concern (*see* Section Two) are discussed. Interview data are aggregated across schools, allowing common themes to emerge. In order of reporting these issues are:

- credit reduction;
- use of 2002 qualifications data;
- teacher workloads and morale; and
- parents' understanding of the NCEA.

We have added a summary of a fifth issue that emerged during the interviews. This issue concerns a perceived difference in status between achievement and unit standards.

Key findings of this section

It is not possible to claim consensus on the various issues raised. As in any large-scale educational reform, the many changes interact with each other, sometimes in predictable ways but other times in unexpected ways. Depending on which aspects are emphasised or valued, changes seen as positive by some teachers are likely to be seen as negative by others.

Issue: Reducing the total credits offered (overall or per course)

- Principals are more generally supportive than teachers of the suggestion that numbers of credits per course should be reduced.
- Factors used to argue for credit reduction can also be used to argue against it. For example, some see credit reduction as an opportunity to teach less better. Others see this as a ploy to gain a competitive advantage over other schools when league tables are reported.

© NZCER

- Reasons teachers see for reducing credits in individual courses include: helping students manage heavy workloads; balancing school work and other interests; prioritising literacy and numeracy for students who struggle with these; and limiting course fees.
- Reasons teachers see for *not* reducing credits in individual courses include: maintaining a “solid foundation” of learning at Year 11; maximising chances of success by providing a cushion of additional credits; and the belief that students are attracted to courses with high credit values.
- Teachers are concerned that some Year 12 students are choosing not to sit some assessments if they do not need the credits to reach the level 2 NCEA award total.

Issue: Reporting and using qualifications data

- Teachers initially found the 2002 Year 11 qualifications data overwhelming.
- The data was processed as quickly as possible to help place the students in appropriate Year 12 courses.
- Teachers in all 6 schools described using the data for professional reflection and for course planning.
- Three schools reported non-achievements for internally assessed standards and 3 did not. Those that did regarded non-reporting as a form of league table cheating. Those that did not saw this as sensible practice.

Issue: Teacher workloads

- While there are clearly many implementation issues still causing concern, particularly in relation to teacher workloads, the general tenor of the comments is one of cautious acceptance of the benefits of the NCEA for meeting students’ learning needs.
- Workloads were still very heavy but time away from classes helped teachers manage the pressures in 2003.
- Curriculum leaders believe a range of workload pressures are specific to their roles.
- Confidence in standards-based assessment is building although frustration with the quality of the exemplars in some subjects remains high.
- Although assessment and moderation processes take longer than previous practices, working in subject teams is seen as a bonus.
- Teachers have made changes to existing courses and some are designing new courses as the NCEA evolves.

Issue: Parental understanding of NCEA

- Five of the 6 principals were of the view that parental understanding of the NCEA is improving and parents are showing more interest in the new qualification.
- There are concerns that many parents still do not understand the implications of the new qualification for widening potential subject choices.

© NZCER

- Some teachers feel that parents of students who did not succeed in the previous system have been quicker to see the benefits of the NCEA.

Emergent issue: Comparative status of achievement and unit standards

- The view that achievement standards are superior to unit standards is commonly held. Some teachers believe this is "NZQA policy".
- Teachers believe that parents support courses with externally assessed achievement standards because examinations are seen as more "rigorous" than internal assessments.
- League table reporting and some external moderation processes support this perception by ignoring unit standards. Level 3 awards are likely to exacerbate this effect.
- Teachers think competitive students prefer achievement standards because there are 3 levels of achievement.

Issue one: NCEA achievement and credit reduction

With some reservations, the 6 principals generally supported the idea of credit reduction but the teachers were more equivocal. While some could see benefits for taking this route, others were more sceptical, and some expressed strong concerns. It was not possible to cleanly organise these varying views into "for" and "against" themes because the same point was sometimes used to support either opinion. This situation highlights the complexity of the dilemmas raised.

Supporting successful learning and assessment

Two teachers supported the principle of credit reduction, initially on pragmatic grounds:

> If you only want 80, what's the point of 800? (Dean, Town School F)
>
> Once you have 80 it's pointless to get too many more. (Teacher, Town School D)

Underlying this, they shared a view that it is preferable to "do less better" thereby creating space for students to follow areas of interest and passion such as science fair work. Another teacher reported dropping the credit level in a Year 12 course to 18. This teacher was considering doing the same at Year 11 "so the students have a better chance of achieving". Four of the 5 HODs in one school said they could see merit in restricting the number of credits offered in order to encourage students to try for merit and excellence.

Presenting the other side of this argument, one principal suspected the motives for credit reduction in some other schools. If a school was restricting students' courses so they would have more practice in those standards they did sit, with the goal of raising the number of excellent awards gained, that school was "cheating". Echoing this view, one HOD at another school suspected that offering courses with reduced credits was a ploy on the part of "neighbouring prestigious schools" to get better overall results for their school records.

© NZCER

One HOD saw credit reduction as a risky strategy for maximising success because some students needed a "cushion" in situations where they did not achieve some standards. As one principal commented: "We want to give them [lower-achieving students] the best chance they've got." Another HOD saw it as particularly important to encourage students to try for all the credits on offer in the contextually-focused courses in the compulsory subjects (*see* Section Seven), where fewer credits were actually offered to begin with.

A third principal contributed another type of perspective to the argument against reducing credits to enhance learning success. He foresaw a dilemma in deciding which standards to remove from each course. If the wrong choices were made, less able students might miss out on credits they could have got. At present the principal would rather see a large number of credits offered with pupils exercising some selectivity over those they tried for and those they let go. "Boys should understand that they won't get every credit and even though they can re-sit, they should choose not to bother, to take the pressure off themselves." This argument shifts the site of control of the credit reduction decision from teachers to students, an interesting position to take in the light of considerable teacher concern about Year 12 student "burnout" and unilateral credit reduction choices (*see* Section Five).

Offering a completely different perspective, one teacher commented during an informal staff-room conversation that she liked being able to design a course with lots of credits at level 2. In this situation, students who transferred into the school half-way through the year would still be able to gain a good number of credits, reducing the disadvantage they might otherwise suffer from being moved in the middle of a course of study.

Attracting and motivating students

Many of the teachers we interviewed were opposed to credit reduction on the grounds that this would make their courses less attractive to students. As one teacher noted, "everyone is very territorial" when it comes to protecting and promoting courses within their faculty areas. A principal who was personally supportive of the idea of credit reduction, saw the chief obstacle to getting staff agreement as being that "no teacher wants her subjects to be thought of as less grunty". Another principal noted that teachers saw credits as "conferring value on their subject".

Underpinning this position is a view that credits *motivate* students, both in their subject choices and in their subsequent learning:

> Kids like credits. (HOD, City School A)
>
> Hard working students need a reward. (HOD, Town School E)

For one Year 12 dean, this view was supported by his experience that student numbers had dropped in subjects such as sport-fit that did not offer credits, whereas the school had 2 NCEA-focused PE classes at Year 12. However, the dean also acknowledged that employment

© NZCER

opportunities (as provided by Gateway courses, for example,) could be a motivation for choosing courses that did not offer credits.

Two principals expressed the view that competition for student numbers in senior courses tended to reinforce the view that the number of credits on offer would help attract students to choose particular courses. In this context one teacher worried that credit reduction would impact on the balance between credits gained in core courses (which would be favoured) and those gained in the optional subjects (which ran the risk of being valued less).

Some teachers, including those who subscribed to the status/motivation/reward argument, were also aware of potentially negative consequences of this line of reasoning. For example, some saw that the perceived ease or difficulty of obtaining credits could then become a subject-choice consideration. In one school, the Year 12 dean and the science HOD both believed that physics and chemistry were losing students because it was seen as “too hard” to gain credits in these courses. In another school, a teacher was thinking about dropping assessments selectively as the course went along, and was planning to do so on the basis of “how easy the credits would be to get”.

In this context several teachers in the same school reflected on what they saw as the vexed issue of equivalence of credits from various types of standards. They saw unit standards as easier for students to get than achievement standards. Internally assessed achievement standards were seen as easier for students to achieve with “dedicated support of the staff” than the externally assessed standards. Even different standards of the same type within the same subject could differ in the amount of effort required for successful achievement. In view of their perceptions of these differences, these teachers were being very strategic in their selection of assessment methods for different courses and students.

Carried a step further, responsibility for strategic selection from amongst the many credits offered to attract students into a course can be transferred from teacher to students. One HOD intended to encourage Year 12 students to be more strategic in selecting the standards for which they would be assessed, picking areas where they could demonstrate strengths. As this HOD pointed out, students “only need 60” level 2 credits to gain a level 2 NCEA. This argument creates interesting tensions with the more common view that autonomous student decision-making is a matter of great concern (*see* Section Five). This tension probably turns on issues of what should constitute a “solid foundation” for school learning (*see* below).

One teacher reflected on motivational issues that can arise when students see getting credits as the purpose for their school learning. She commented that she had to check the impulse to tell able students not to worry about level 1 credits “in case they slacken off”. Another worried that the novelty of being able to accumulate credits, which students are currently enjoying, will have “worn off” by Year 13. Already, teachers are worried about lack of motivation of Year 12 students (*see* Section Five), with one HOD attributing this to burnout from the pressure of the Year 11 external assessments and the prospect of yet more external assessments at Year 12.

© NZCER

The staff at Town School E tended to be the most supportive of the view that credits would motivate students. Some thought that students should be encouraged to gain as many credits as possible. One noted that some students got 150 level 1 credits last year and said that the totals that could be achieved were "an issue of what teachers, not students, can cope with". Another HOD thought that NZQA should be differentiating levels of the NCEA award based on the credit total achieved (for example, 80 credits would be achieved, over 100 might be achieved with merit, and so on). The HOD of mathematics discussed the credit requirements that could gain students a New Zealand Certificate in Mathematics (NZCM) from 2004, in addition to their NCEA award. To gain this double award students would need 30 credits in mathematics, derived from unit and/or achievement standards and 10 more credits in the sciences. The department intends encouraging able students to try for both certificates (NCEA and NZCM). Notwithstanding this general endorsement, these HODs are also aware that gaining high credit totals can be problematic. One noted that students are now inclined to ask "does it count?" and that some students who already had 80 credits by the time of the external examinations last year did not bother to sit these.

Ensuring a "solid foundation" of learning

A commonly expressed reason for not reducing credits concerned the perceived flow-on impact to curriculum. For example, 4 of the HOFs at City School B were opposed to the idea of credit reduction at Year 11, on the grounds that topics studied at this level create a foundation of knowledge upon which the senior subjects can build. A similar view, expressed in another school, was that students need courses with full credit totals so that they do not disadvantage their "global learning pattern of gathering a whole lot of information".

At a third school, one HOD expressed the view that the staff needed to debate both the credit totals needed *and* which standards are the most important, asking "Why do we insist on some and not others [for entry into the next level] when School C was just 50 percent?" This HOD saw a danger that the NCEA would produce more restrictions for students' year-to-year progress within their subjects because more specific prerequisites could now be nominated.

Some teachers saw Year 12 as a place to consider the possibility of reduced credit courses because students "only need 60 level 2 credits". However, even at this level, credit reduction was seen to have potentially negative consequences if students did not lay an adequate foundation for level 3 learning and were precluded from entry to courses that had specific prerequisites. The teachers believed they should concentrate on assessing level 2 topics that would be important for level 3.

One Year 12 dean said that students should "prioritise literacy and numeracy [credits] above all else". He noted that some more able students had missed their NCEA level 1 award because they had not done so, while less able students had passed.

© NZCER

The concern with ensuring a "solid foundation" of student learning was raised in 2002 as a tension between providing wide subject-choice and prescribing a range of core subjects (Hipkins and Vaughan, 2002a). In the context of the 2003 interviews, however, *within-subject* curriculum coverage appears to be equated with assessment coverage – a view that could be reinforced by the perception that earning credits will motivate students to learn. This situation is not new. Writing in a pragmatic vein, well before standards-focused assessment was being widely used for qualifications, 2 experienced science educators suggested that:

> The assessment tail will wag the curriculum dog whatever we do, so let's make sure that the tail is designed as part of the dog in the first place (Parker and Rennie, 1995, p.52)

Subject-specific comments made by HODs, reported above and in Section Six, suggest that the compartmentalised nature of external NCEA assessments[11] reinforces the view that similar compartmentalisation should apply to curriculum delivery – that is, courses should be divided up internally into topics that match the various standards used. We have found the same view in other recent NCEA research (Hipkins and Neill, in press). This is a problematic aspect of the NCEA reforms because the very same compartmentalisation enables schools to design new courses and redesign more traditional courses to better meet specific student needs (*see* Sections Seven–Nine).

Taking account of other student needs

When the wider contexts of students' lives were raised as arguments, credit reduction tended to be favoured. For example, the principal and one of the deans at City School A both commented that 3 years of examinations in the senior secondary school is one too many. Students have a school life that should include the arts, field trips, sports events, and so on, but teachers are more and more reluctant to let students miss time in their subjects. The principal suggested that the Year 11 qualification could disappear.

In another school, 2 HODs supported credit reduction, at least in principle, because schools are "wearing kids out with too many credits". The science HOD named biology as a level 2 course where less credits were already offered because the full course is "too much work".

One principal saw credit reduction as a way to limit the costs of NZQA fees for families that struggled to afford them.

Issue 2: Use of qualifications data

Notification of the 2002 qualifications results took place just before school resumed in 2003. For the first time Year 11 students received a separate result for every standard for which they had

---

[11] Though they are clustered by subjects, students sit a separate "paper" for each external achievement standard.

© NZCER

been assessed rather than one global percent mark for each subject. Since this was a significant new step in the NCEA implementation, we asked teachers for their impressions and opinions, as well as seeking information about how the data had been used in each school. A range of views emerged. These were occasionally contradictory, but there was a greater degree of consensus than on the issue of credit reduction.

Making sense of the data

Initially, most teachers found the sheer volume of information a challenge. They used adjectives such as "mind boggling", "overwhelming", "horrendous", "enormous", and "vast", but some also described a "fabulous variety", of "hugely useful" information. They quickly found they needed a strategy for simplifying the data because:

> It was easy to spend too long analysing the data. (HOF, City School B)
>
> The data was horrific to analyse and it was hard to find one statement you could make. (HOD, City School A)

This City School A HOD rose to the challenge and created a summary for each re-enrolling Year 12 student that included: the total number of credits achieved per subject; yes or no to both literacy and numeracy requirements;[12] yes or no to overall achievement of a level 1 NCEA. She noted that the requirement to download "per student/per subject" individual records was "laborious and slow". However, once this had been done she had created what one dean called the "best piece of paper" for use when confirming students' courses. The principal noted that, having now worked out how to do the analyses that are useful, the school will be able to take much more rapid advantage of the wealth of information in the data next time.

In City School B, one HOF described going through a similar process for just her subject. She had accessed 8 different standards for all 250 of her students – 2000 individual actions to take in order to compile class lists of collated results for all the 2002 Year 11 students in her subject area. She did this task at short notice to provide advice to students on their Year 12 choices, but it took a lot of her personal time. Strategies used by 2 HODs in Town School D were putting the data onto a spreadsheet created for that purpose, and making sense of the data with the help of a subject-focused on-line community of teachers.

One principal said that the school needed help in the area of data analysis, as this was not a strength of most staff. Another principal found NZQA's suggestions for using the 2002 data helpful and hoped they would continue to provide such advice in 2003. A third principal wryly observed that the data created another job – "we have to *do* something with it".

[12] Students need 8 level 1 credits in each of literacy and numeracy to be eligible for an NCEA award at level 1.

© NZCER

Checking the appropriateness of students' subject choices

There was a rush to convert the data into a useful form so that teachers could check that students had achieved in areas where Year 11 success was seen to be crucial to their further progress. When the data first arrived in the school in City School C, the numbers of the various standards on the record of achievement of each student were immediately manually converted to subject names. Although this "slowed everything down", especially as the data arrived the day before the students came to school to re-enrol, it allowed the teachers to discuss the overall record of each student as an individual learner. They found this helpful for making adjustments to the pre-requisites that had been set in advance for entry into Year 12 courses. In another school one, dean found the subject number codes helpful and wanted to see all teachers using them in 2003.

Town School E initially set challenging prerequisites for 2003 Year 12 courses, but the HODs subsequently said they used the 2002 Year 11 qualifications data holistically and pragmatically to determine Year 12 placements. Several described looking at an individual student's pattern of achievement across his subjects if he had done unexpectedly poorly in certain areas. On the other hand, some students who had not bothered to attempt internally assessed standards, and who had found themselves short on credit totals from their external examinations as a consequence, had been denied entry into the relevant Year 12 courses. The HOD who discussed this noted that no parents had complained about these decisions. "They knew they [their children] didn't work hard enough."

One principal noted that it is a "huge job" juggling options for all the senior students. While the school did attempt to use the 2002 achievement data when placing Year 12 students, they had not been able to begin the interview process until the day school resumed because this was when the NZQA data became available to them.

There was a general feeling of frustration amongst the deans and HODs of a fourth school that the potentially rich data came so late and was so overwhelming in its volume. The Year 12 dean found it took time to sort out "mixed messages" between some students' claims they had met literacy and numeracy requirements and the NZQA records.

Using the data for professional reflection

One HOD said he was "full of religious fervour to make use of it" when the data first became available. Subsequently he had felt "swamped" by the ongoing implementation pressures and had been unable to use the data as much as he first envisaged. However, he did say that it was useful to be able to pinpoint areas within the curriculum where students had not achieved as well as anticipated. A HOD in another school said that "the external results told us more about what we were doing than what the students were doing".

Several HODs in a third school reflected on areas within their subjects where they felt teaching could be strengthened. One of these HODs cautioned that it was inappropriate to use the data to make comparisons between the achievements of the various classes – and, by implication, the

© NZCER

effectiveness of their teachers. HODs were given such an analysis for the staff in their department but this HOD kept it private to each teacher in the team. Amongst the contextual difficulties the HOD saw in this practice was the issue of whether credits are easier to get in courses with more unit standards than achievement standards.

Principals were keen for staff in subject departments or faculties to reflect on their standard-by-standard result patterns and to pinpoint areas in which they thought their teaching could improve. However, one principal cautioned that the overall ability levels of students in the various courses needed to be taken into account if making comparisons across subjects. Another thought that reflection on patterns of results might lead to shifting some elements of courses to a more appropriate year level, based on an analysis of the cognitive demands of the topic. Two principals said the 2002 data would be used to help plan courses for 2004. One was debating shifting the school's planning and reporting cycle to a July–July timeframe, allowing time to draw on the final NZQA data which arrived in May 2003. Because the Year 11 2002 data would become the basis for making decisions about meeting student learning needs of the Year 11 2004 cohort, the fit may not be perfect, but the principal felt that might "not matter".

Two principals spoke of using the 2002 data to encourage their staff, poised to begin level 2 implementation at the beginning of 2003, to reflect positively on their progress with NCEA implementation. One principal suggested staff review the 2002 achievement data to "tell ourselves we are doing well" while the other urged the HODs to "find 3 good things" in the achievement data for their courses.

With some reservations, the teachers generally found their students' qualification successes useful for professional reflection on the appropriateness of the programmes they offered, their teaching of individual topics, and their progress in implementing the NCEA changes. More unease was expressed about the use of qualifications data to make comparisons that implied some schools were doing a better job of teaching students than others.

Using qualifications data for accountability purposes

The use of qualifications data to make comparisons between schools, and to infer "quality" of courses from these comparisons, is not a straightforward matter. Several issues that can potentially create misleading and unfair comparisons were raised during the course of the interviews. One has recently been aired by the media (Middleton, 2004; Richardson, 2004). These issues are discussed next.

The NCEA reports data on a per-standard basis whereas norm-referenced examinations report one global mark per subject. The richer NCEA information is helpful for reflecting on within-subject aspects of students' learning and to allow them to demonstrate specific aspects of skills and knowledge in which they have strengths. However, it is not easy to make quick comparisons between all the students taking the same subject. The next section shows that the same subject can

© NZCER

no longer be assumed to teach a universal mix of knowledge and skills because courses can be locally-redesigned to meet the needs of specific groups of students.

Notwithstanding this complexity, when the NCEA was being developed there was demand for a single per-subject measure of achievement that could be used for making direct comparisons between students and between schools. The Ministry of Education met this call by the creation the "grade point average" or, more recently, the "grade average". This creates a single percentage mark from the aggregated pattern of excellence/merit/achieve results for achievement standards assessments in each subject.

One principal described the grade point average as "a complete waste of time" because it only draws on results from achievement standards. A HOD from another school described it as "nonsense" and also said it would only mean something if it covered unit standards as well as achievement standards.

These comments highlight another difference between the traditional norm-referenced examinations and the NCEA that makes the use of data for accountability purposes problematic. While there are 2 ways to gain credits for qualifications, the calculation of the grade point average is one practice that makes the use of achievement standards appear privileged over the use of unit standards. This perception of the superiority of achievement standards was seen by some HODs and at least one principal to impact detrimentally on some students' and parents' subject-choice decisions.

One principal said comparisons between pass rates in achievement and unit standards were misleading because a 100 percent pass rate was possible for the latter given "a talented teacher and good students" but highly unlikely for the former. Because of this, comparing School Certificate and the NCEA, he said, was like comparing "apples and persimmons".

Differences between schools when reporting passes for internally assessed achievement standards are another source of tension when results are used to compare overall patterns of academic success in different schools. HODs at 3 schools commented on what they saw as the misleading nature of inter-school comparisons of results for internal assessments. If students who fail internal standards do not have the relevant record sent to NZQA the school can emerge with a 100 percent pass rate for that standard. These HODs felt aggrieved about what they saw as skewed achievement patterns reported for schools that did this – a view that has also been aired by some media commentators (Richardson, 2004). However, HODs at 2 other schools viewed this issue from the perspective of what was best for their individual students. One commented that teachers would be "stupid not to" [withhold fails] and another said "Why pay for something they don't get?"

There is no doubt that these different reporting practices did result in unfair comparisons being made when the 2002 data were used to create league tables to compare schools. In our sample, 3 schools reported fails for internally assessed standards and 3 did not. This dilemma – to report or

© NZCER

not – reflects a direct conflict between credentialling the learning achievements of each student and using qualifications data for accountability purposes.

HODs at one school said they used the processed qualifications data to report progress to their school BOT. However, the principal at another school worried about the "eagerness" with which the School Trustees Association advocated the use of the data in school goal setting and reporting, saying this was potentially "a way of controlling teachers".

Issue 3: Teacher workloads

Teachers in all 6 schools continued to express concerns about the heavy workload generated by NCEA implementation. While principals shared this concern, several also expressed the view that work pressures had eased somewhat in 2003. One principal said that staff were more confident about the NCEA and that the pressure to make appropriate professional judgments was settling down. However, she remained very concerned about the cumulative workload pressure generated by the implementation at levels 1 and 2, saying it had "doubled the workload".

Where schools had organised a regular in-school time for teachers to discuss and implement their NCEA plans, this has been well received, making aspects of implementation such as within-school moderation much easier to organise. City School A sent its students home early one day a week so that staff teams could meet and carry out planning, moderation, and other work related to the NCEA implementation. One HOD said that this had "stopped her going under". City School C and Town School F had a staff-only period one morning a week. One HOD at Town School F described the 2003 timetable as "brilliant", noting that non-contact time to meet teacher needs was built into it from the start. Another HOD at this school described his departmental team as "just humming" in 2003.

HODs felt that workload pressures were particularly high for them as curriculum leaders. They described several areas in which new types of tasks were required of them since NCEA implementation began. These are described below.

One HOD felt it was her responsibility to lead the change at each level of her subject for the first year. However, while taking on level 2 in 2003, she had not felt able to hand over responsibility for level 1 to another member of her big staff team. Several teachers were new to the school, and others had various responsibilities that precluded them being able to take on the level 1 co-ordination role. With both levels to take care of herself, the HOD said that the situation was "driving me mad with extra work. They are nitty gritty things but they add up to too much." She wondered how her team would manage when level 3 was added to the mix.

Speaking on behalf of the curriculum leaders of the smaller subject areas, one principal noted the additional pressures that they face. Where a person is the only teacher of a specific subject area within the school the full weight of the responsibility for NCEA implementation at all levels falls on them alone.

© NZCER

One HOD noted that communication between teachers within subject departments required a lot of time. Changes needed to be worked through carefully, especially in core subjects where there was a big staff team to consult. Another HOD in the same school commented that e-mail created additional pressures when parents used it to communicate with teachers and the teachers needed to respond quickly.

Administrative tasks

Many HODs identified a range of NCEA-related administration and record keeping pressures, for example, the challenges of sorting and storing students' work to meet moderation requirements, and coping with the huge increase in available data on student achievement. Two HODs and 2 principals mentioned spiralling photocopying costs. One principal also mentioned the impact of the necessity to create more storage spaces for the records that needed to be kept. One HOD mentioned the challenge of keeping up with ICT advances and the costs involved in getting training for the staff in this relatively isolated school.

While one HOD at Town School E felt that there was no more work now than there had been since unit standards were first introduced, a dean at another school, teaching a subject with a higher than average internally assessed component, felt that she was "just clambering along, sorting level 2 achievement standard by achievement standard".

Implementation processes for standards-focused assessment

Both principals and HODs described workload pressures that increased sharply while teachers were getting to grips with the processes involved in standards-focused assessment. The principals were cautiously optimistic that professional confidence was building. One said that as teachers became more confident in the professional judgments they were making about assessment tasks they did not require as much evidence to make their judgments, and so managing assessment was becoming easier. Another principal noted that students felt that the over-assessment that had initially characterised the change had settled down. However, the new types of examinations were more work for staff to write because they still required practice.

There are several types of tasks involved in the change of qualifications regime – all of which were new for some teachers who had not been previously involved in standards-focused assessment initiatives. These include:

- developing an understanding of the principles of standards-focused assessment;
- learning to adapt existing tasks and write new task for a standards-focused regime;
- learning to make new types of judgments of students' achievement – rethinking time-honoured practices for "marking" of students' work;
- developing a shared professional understanding of standards and learning to use the moderation processes designed for this purpose; and
- rethinking course designs to accommodate new possibilities that are opening up.

 © NZCER

In reality, all of these types of tasks become tangled through each other in the press of ongoing implementation, as discussed next.

Unit standards describe competency or performance-focused elements. The student who demonstrates such competency will achieve the standard. The only other option is to "not achieve" the standard. Achievement standards also describe standards but each one is differentiated into 3 levels of achievement – "achieved", "achieved with merit", and "achieved with excellence". Thus, including the "not achieved" possibility, there are 4 potential outcomes when students are assessed in this way, compared with 2 possible outcomes for unit standards. The standards for merit and excellence are designed to be qualitatively different from the basic "achieved" standard. One HOD said this took longer in some subjects where mostly tick/cross marking was used previously. Another HOD reflected on the shared understandings that were building between teachers as they moved away from "impression marking" by unpacking the standards descriptors as they applied to specific tasks. One principal said it was a "wonderful plus" that teachers were getting used to marking together.

Unit standards are always internally assessed and so the workload burden associated with assessment for qualifications rests largely with individual teachers and schools. Many HODs seemed to be less anxious about the moderation of unit standards-focused assessment tasks. This is doubtless a reflection of the newness of the achievement standard exemplars, whereas "tried and true" materials and tasks exist for a wide range of unit standards – at least in those schools where this approach to assessment has been used for some years now. One HOD described unit standards as "easier, more straightforward and less work for the teacher – especially with the simple achieved/not achieved [criteria]".

At least half of all the achievement standards developed are externally assessed via an end-of-year nationally conducted examination. This arrangement was intended to alleviate teacher workloads (Ministry of Education, 2001a) and to relieve anxiety about comparability of judgments between schools. Several HODs reported a perception amongst parents that achievement standards are "superior" to unit standards, perhaps because assessment by examination is superficially familiar[13] and is seen to be a fairer way of comparing students in different schools.

A shared understanding and translation of this aspect of the new assessment instruments into specific assessment tasks, marking schedules, and teacher judgments will doubtless evolve over time, in the way that "standards" for traditional examinations also evolved through many years of common practice. At the time of this research, however, inconsistent judgments, particularly about evidence for "excellence", were being cited by critics of the NCEA who believe the qualification is fundamentally flawed (Chamberlain, 2003).

[13] In fact the examination questions and marking schedules are intended to be quite different from those associated with traditional examinations of the recent past. The intention is to assess student achievement against the 3 levels of each standard. Students' performance should be judged as a whole rather than via a counting-up of the pieces of knowledge displayed correctly.

© NZCER

The issue of comparability of judgments for standards that are internally assessed in different schools is managed by moderation procedures that apply to both unit and achievement standards. In one school, an English HOD told us that staff were required to produce material related to the achievement standards but their unit standard materials and judgments were not checked during an in-school moderation visit. This practice had contributed to the perception that achievement standards are officially favoured over unit standards and the HOD also felt the NZQA website is "biased towards achievement standards".

These moderation procedures continue to generate heavy workloads for the HODs who must account for the work of their subject teams. These processes were new for the many teachers who had not used unit standards prior to the implementation of the NCEA. The Ministry of Education provided considerable professional development support but this was not without its frustrations. One HOD commented on the stress generated by the timing of the professional development. In May 2003 he noted: "We should be planning for Year 13 now, not still addressing Year 12." He was about to go on a course to learn about writing achievement standards assessment tasks for Year 12 but what he really wanted to be doing during the professional development was "forward planning" for implementation at Year 13.

One HOD said: "I don't want to write assessment tasks. I expect to find them on the Internet – that's NZQA's job." Another commented on the difficulty of working hard to get the new qualifications regime embedded in the school while at the same time being expected to also work on contributing to exemplars at the national level. This HOD had felt "kicked by the MOE" when it was suggested at a training day that the teachers themselves should be taking more responsibility for the quality of the exemplars. Another said it was hard to write good tasks with such limited guidance.

There were continuing anxieties over moderation in subjects where exemplars had been put on the Internet but subsequently withdrawn and replaced with substantially modified tasks. One HOD described this as "punishing people who plan ahead". Three of the 5 HODs in one school who expressed frustrations about the quality of exemplars nevertheless remained positive about the benefits of the NCEA for their students' learning. One of them concluded: "The old exams were easier [to manage] but these give more flexibility and success for more students."

One HOD expressed the view that NZQA did not give constructive answers to help-line questions and that they were "keeping teachers at arm's length". Another observed that the electronically provided NZQA materials had to be downloaded, which took time and shifted material costs (printing, paper) onto teachers.

One HOD said that having tasks rejected by moderators was very stressful and that teachers tried hard to design good tasks that would avoid this. Another commented on the stress generated by having a *task* moderated *after* the students had been assessed. He did not get all aspects of one task correct and felt he had been "flying blind" and that the task had therefore not "done justice to the students' learning". A similar incident was reported in another school and the HOD concerned said he had felt "caned" when a new interpretation was made of one standard and the exemplar

© NZCER

task was changed accordingly. Because he missed this change on the NZQA website he had gone ahead and used the unmodified exemplar with his students, only to have it rejected by the moderator after the event. In his view some exemplars were “rubbish” and workload stresses were preventing teachers from making the space to think creatively about their work. We heard this same comment from another HOD who had also designed interesting modifications to courses.

One science HOD praised the exemplars available for level 2 chemistry and physics. She was also grateful to be able to access an e-mail group set up by a teacher from an Auckland school that alerted chemistry teachers to NZQA changes and provided a forum for supporting chemistry teachers through the NCEA implementation. This voluntary service was also mentioned appreciatively by chemistry teachers involved in the *Shifting Balances* NCEA research (Hipkins and Neill, in press). Another science HOD was concerned that the biology exemplars were not as helpful as those in chemistry and physics, a view that we also heard in the *Shifting Balances* research. Some marking decisions made for science achievement standard 1.3 in the 2002 external examinations had exacerbated this HODs perception that all is not well in the biology curriculum area.

An English HOD said that the quality of exemplars in her subject area was higher than for some other subjects so she was feeling more confident now.

Two HODs in Town School D had volunteered to carry out NCEA-related tasks beyond those required within the school. Both said that they did so to gain a broader perspective on their own work – in the words of one, “to find out what’s going on”. The roles they had taken had given them opportunities to compare their school situations with those of others. One was an external moderator of her subject and also did some level 1 marking for one standard in the 2002 external examinations. She said that she found the marking easier than the equivalent School Certificate marking. The second HOD had been an NCEA facilitator, helping to prepare other teachers for implementation at level 2. She had the sense that schools were getting better at trusting their professional judgment in her subject area and were also becoming more trusting that other schools exercised their professional judgment fairly. She also marked external examinations for one standard at the end of 2002.

On-going course design work

Schools are very conscious of the need to produce clear course information for students. This is another area where ongoing NCEA changes have created additional stresses for the HODs. One HOD noted that the recent revision of the level 1 achievement standards had necessitated changes to course documentation. This had taken time and further increased photocopying costs. Another HOD in the same school said that the change of terminology from credit/merit/excellence to achieve/merit/excellence, while small in itself, had necessitated the reprinting of report forms.

As well as changes imposed from outside the school, within-school changes are also adding to workload pressures. Section Seven details a range of ways in which HODs have reworked courses in the core subjects of English, mathematics, and science. It seems highly likely that such changes

© NZCER

are being made in all areas of the curriculum. One HOD reflected that the ability to respond flexibly to student learning needs, while helpful for students, created additional pressures for teachers. She said: "You plan as you go, realising you are biting off more than you can chew."

As well as redesigning Years 11 and 12 courses, some HODs said they were revising courses at Years 9 and 10 to match the new assessment practices of the senior secondary school. One HOD described this as a lot of work, but noted that assessment of junior courses in the subject had been "very traditional". Results from a related study (Hipkins and Neill, in press) suggest this is likely to be the case.

In areas such as technology where the curriculum has substantially changed what is assessed in recent years, teachers face the challenge of rethinking their teaching, as they also learn new methods of assessment (*see* also Section Eight). For those who do not have university degrees, issues with their salary status were an ongoing concern. Two technology teachers said this added to the workload stress they were feeling.

One HOD commented that all these pressures would get worse when level 3 was implemented as well. Another noted that the implementation of the NCEA "relies hugely on teacher goodwill" to make it work for the benefit of the students. She said teachers "were grumpy about extracting results [student achievement data from the NZQA website] but we did it". She also felt "grumpy about resubmissions at lunchtime but we did it". Notwithstanding these remarks, the HOD then added: "But it's actually fabulous for the kids — that's why we've made it work in spite of NZQA and the Ministry of Education." Similar sentiments were expressed by a HOD in another school who said that NCEA was "working because teachers refuse to let kids be disadvantaged. As teachers we have to be able to live with ourselves."

Issue 4: Parents' understanding of NCEA

We found a range of different perspectives on whether parents understood the NCEA better in 2003 than in 2002. Principals and some teachers took a more global view, whilst other teachers were more focused on the impact of parents' beliefs on choices students made about the subject options they would take.

The principals' views

Five of the 6 principals were broadly of the view that parents were more relaxed about the NCEA now that the first year had been completed. The principals of City School A and Town School F said they had fielded fewer phone calls in 2003 now that "publicity in the media has settled down" and "parents' understanding of the NCEA has improved". City School A's principal believed that Internet access to the school's website was helping with information dissemination. The principal of City School B noted that parents were asking more questions about their children's subject choices, especially those parents "who really value education". She thought their awareness of the

© NZCER

issues associated with course selection had been raised by the introduction of the NCEA and she enjoyed the high level of interaction she had experienced with both parents and students during the 2003 enrolment week.

In 2002, when City School C ran 2 parent evenings, just 6 parents came to each and staff were concerned that parents were giving their children advice that was constraining their ability to make appropriate subject choices (Hipkins and Vaughan, 2002a). In 2003, 42 parents came to the first NCEA evening held at the school. They wanted to know more about their children's results sheets from the 2002 examinations and they asked how they could get more information about the pending 2003 assessment events so that they could better support their children at those times. The principal said that the school was planning to put this information on the school website where parents could access it. While this increase in attendance was an improvement, the principal noted that there were "many more parents who don't come".

The principal of Town School E was of the view that there was more support for the NCEA in the wider community than recent media coverage seemed to indicate. He noted that the people who benefited most from the previous system were more critical, while people whose own educational experiences were less successful tended to be more supportive. He was not sure that parents understood the full potential of the national certificates offered by the school as yet and this hampered their ability to help their children make good subject choices. He also commented on the need to provide advice to parents who were putting undue pressure on their sons by expecting them to achieve every credit offered. He had pointed out to a mother that she would not have expected her son to get 100 percent in every School Certificate subject, but that was effectively what she was expecting now.

The principal of Town School D said he had been urging teachers not to use "standards-focused jargon" in their communication with parents. He felt that more parents than teachers were "hankering after the old-style exams".

The principal of City School A felt that the greater communication challenge lay in getting university staff to understand how to interpret the details of a student's record of learning, when all they really wanted was a "quick ready reference".

The teachers' perspectives

One dean noted that, generally, parents were now more accepting of the NCEA "whether or not they understand it better". However, parents whose children were more successful in the previous qualifications regime were more likely to "hanker back" to that system.

We noted in 2002, Town School E perceptions that parents of their students appeared to be polarised along the lines of their aspirations for their son's future study or work (Hipkins and Vaughan, 2002a). This seemed to be an ongoing dilemma for this school community. One HOD felt that parents who wanted their sons to get "excellence" put pressure on the school to use achievement standards. The HOD felt that the school should stick to its plan to use unit standards

© NZCER

where possible and that the adoption of achievement standards was just to “assuage parents’ concerns”. However, another HOD identified the “mixed messages” between the support for unit standards in Town School E and the emphasis on achievement standards in the local girls’ school as a source of parental confusion and dissent.

All Year 12 students in Town School D prepare Personal Career Plans that map their study pathways. These are used in discussions with their parents. An important aim is to use the plans to encourage students to work to their abilities. One HOD at this school said that many parents’ understanding of the NCEA had yet to improve but also that those parents who were not “anti can see that the kids like it”.

The HOFs of the arts and technology at City School B felt that many parents did not yet understand the potential of these curriculum areas. They wanted them to realise that “there is rigour in these subjects too”. The HOF of the arts felt that parents often valued their children having extracurricular cultural experiences but didn’t want them studying the arts as actual subject areas.

One City School C HOD thought that parents were still confused and that it was hard to get them to understand the significance of choices made at Year 11 for consequent pathways through the senior secondary school and beyond. In the view of this HOD, students in the school’s community lacked role models for a range of potential careers and so could not envisage some types of pathways. The HOD also thought that negative media reporting of the NCEA had made parents more negative about it.

Students’ perspectives

We did not ask students about how well they thought their parents understood the NCEA because our focus was on the students’ reasons for their subject choices. However, in the student survey carried out by Town School F, 22 percent of the Year 11 students said they thought their parents understood how the NCEA worked, 38 percent said maybe they understood, and 40 percent said their parents did not understand. Asked if they thought their parents were supportive of the NCEA, 26 percent said yes, 56 percent said maybe, and just 18 percent said no.

The comparative status of achievement and unit standards – an emergent issue

The issue of equivalence of credits from the various assessment instruments (unit standards, internally assessed and externally assessed achievement standards) has been raised in a number of contexts and is clearly of ongoing concern. The view that achievement standards are superior to unit standards is commonly held, with some teachers believing this is “NZQA policy”.

A number of factors appear to be contributing to this perception. Some factors are embedded in NCEA implementation processes and procedures. For example, some teachers’ experience of external moderation processes was that only the quality of materials for achievement standards

© NZCER

was scrutinised. While this practice may well relate to the moderators' confidence that unit standards are more familiar and the materials have had longer to be fine-tuned, this reasoning might not be apparent in a school where the standards-focused regime is new. One teacher expressed the view that the layout of the NZQA website favoured achievement standards. This view may or may not be more widely held and personal impressions are likely to be flavoured by other NCEA experiences.

Teachers believe that parents support courses with externally assessed achievement standards because examinations are seen as more "rigorous" than internal assessments. Examinations are the type of assessment for qualifications that is familiar to the adult community in general. Although NCEA examinations have some unusual features compared to norm-referenced examinations, members of the public may not yet be aware of these differences. Publicity about the NCEA has tended to negatively highlight differences in reporting practices for internally assessed standards (achievement as well as unit standards) and this doubtless contributes to negative views of unit standards.

League table reporting underpins concerns about equitable reporting practices and contributes to the perceptions of achievement standards superiority because success in gaining unit standards is typically ignored when comparative ratings are calculated. It is easier to construct numerical comparisons using achievement standards because there are 3 levels at which a standard can be awarded. Teachers think competitive students prefer achievement standards because of these 3 levels of achievement. Level 3 scholarships, to be awarded for the first time in 2004, are likely to exacerbate this effect because they will be judged only on achievement standards.

Underpinning all this there may be an ongoing perception that achievement standards are for more "academic" students and unit standards are more suitable for "vocational" students – that is, the binary will be reinforced by the superiority perception and opportunities to rethink this entrenched curriculum division will be lost. The findings of the analysis of the core school subjects, reported in the next section, pose new questions about whether and why this binary should be rethought. The issue bears further investigation.

© NZCER

Section Seven

The nature of variation in options offered for core subjects

Introduction

During the first year of the *Learning Curves* research we found that all 6 schools had moved quickly to provide a range of learning options within the compulsory subject areas of mathematics and English, and to a lesser extent in science. Most schools already offered “applied” or “local certificate”[14] versions of these subjects before the implementation of the NCEA at level 1, so this was not an entirely new development. What had changed, however, was the facility to offer qualifications credits for these courses that could count towards the same Certificate of National Educational Achievement as could credits from the “academic” courses. Teachers in the case study schools reported that this had led to a lessening of the “cabbage” pejorative that can attach to alternative courses and this was reported as a positive finding from the first year’s research (Hipkins and Vaughan, 2002a).

Because we had not anticipated the variety of within-subject options that we would find, we had not gathered data in 2002 that would allow us to describe the diversity of these courses. Nor could we report on how the various HODs saw their specific courses as best meeting the learning needs of their particular student populations. However, we did get a sense that different HODs in the 6 schools were using different creative solutions to address similar sets of issues and challenges. In 2003 we have gathered more explicit detail about the variations of within-subject options at each school, at both Years 11 and 12. These are reported here for the 3 core subjects – mathematics, English, and science.[15]

14 For example,, “Auckland Science Certificate” or “Wellington Mathematics”.

15 Year 12 sciences are not included because there are too many choices to be able to sustain this level of analysis without hugely expanding the report. However, some commentary is made on the types of courses offered at this level, in comparison with the Year 11 courses described.

© NZCER

In order to begin…a vocabulary for discussing different within-subject options

While each school has its own terminology for naming the options it offers within a subject, we needed to devise a common terminology for comparative purposes. It may seem that the names we have ultimately chosen are somewhat cumbersome. However, it is our experience that names are very powerful. We began by calling certain types of courses "academic". In the binary differentiation typical of modern thought, all other courses become "not-academic" – a distinction we ultimately found unhelpful for our analysis.

In this report we see the tentative emergence of some new types of courses that contain elements of what could be described as "academic" and elements of what could be described as "vocational". What are such courses to be called? And if more of them appear over the coming years, how are we to think about their general nature and learning value if we do not shift our mental frameworks for making judgments? The names we have chosen, after much debate, take account of what has changed already, but also look forward to the further mixing that is entirely possible within the NQF qualifications regime. Our rationale for each is explained and referenced to key findings from this section

Key finding: Traditional-discipline courses

The majority of Year 11 students in the *Learning Curves* schools are studying English, mathematics, and science in what we have chosen to call *traditional-discipline* courses. Such courses have key characteristics in common:

- They are entirely or largely assessed by achievement standards, not unit standards (except in some cases in Town School E);
- All or most of the subject-specific suite of achievement standards for the year level/subject are used to assess the course;
- The curriculum offered tends to be organised around the divisions imposed by the separate standards (course outlines for the year tend to be summarised with reference to the standards that will be "covered" in each term); and
- These divisions reflect traditional ways of thinking about the structure and content of each discipline within the school curriculum.

In the mid-twentieth century the sociologist Basil Bernstein called for serious theoretical and empirical study of the *structure* of educational knowledge. He devised a typology of subject types that could be used for such study (Bernstein, 1971). Within the scheme that he devised, what we have called traditional-discipline courses would be seen as both "strongly classified" – that is, the boundaries between the individual disciplines are closely guarded and carefully maintained. These courses are also "strongly framed" – that is, the power to select, organise, and pace students' learning rests almost entirely with the teacher, with little input to these types of decisions sought from the students. Bernstein argues that school subjects that fit this profile socialise all students –

© NZCER

including teachers when they were students – into a self-perpetuating subject loyalty. Thus our choice of the term "traditional-discipline" signals both a pragmatic characteristic (this is, how schools have traditionally organised these subjects) and a more philosophical characteristic (this is, how knowledge has been traditionally organised and perpetuated in Western societies).

Key finding: Locally-redesigned courses

In mathematics, 5 of the 6 *Learning Curves* schools offer what is seen as a "middle" option to Year 11 students who are perceived to have some specific learning challenges for their achievement at their year level. In these courses, the strong framing we found in the traditional-discipline courses begins, albeit very tentatively, to break down. These mathematics courses have the following characteristics:

- They are assessed by a mixture of achievement and unit standards;
- Teachers in the 5 schools have selected different mixes of standards. Choices are based on their past teaching experiences and their perceptions of students' continuing learning needs;
- At Year 12, some standards used to assess the course are set at NQF level 1 and some are set at NQF level 2; and
- The curriculum usually continues to be organised around the assessment instruments used, but most courses "cover" less of the traditional curriculum content, allowing for some variation in pacing and limited introduction of broader contexts for learning.

These mathematics courses, while all somewhat different in their details, remain traditional in their classification. The time-honoured division of mathematics into various "topics" is maintained, and indeed the courses may be seen as stepping stones to help students move on to traditional-discipline courses at a later stage of their learning. However, they are not as strongly framed. They open up opportunities to vary pedagogical approaches by reducing content, varying curriculum levels, or, in the case of City School A, by spreading the course over a longer time span. Within the old typology, describing such courses as "academic" or (by implication) "not academic" is highly problematic, since they do not differ from more traditional courses in some respects.

Interesting possibilities emerge when we consider other ways in which courses might be locally-redesigned within the NQF regime. For example, one *Learning Curves* school is debating developing a Year 13 integrated mathematics/music course for 2004. Such a course would no longer be as strongly classified as an individual traditional-discipline course although the subject divisions could remain highly visible, depending on how the course is organised. This is the first instance of a locally-redesigned course that crosses discipline boundaries that has been discussed with us by a HOD in any of the 5 curriculum areas we are investigating.

Traditionally, Year 11 science has mixed the distinct disciplines (biology, chemistry, physics, and more recently and controversially, earth science, and astronomy) within one subject. Separate subjects for biology, chemistry, and physics are also available but are taken by a limited number of students. Traditionally, the separation into separate disciplines has taken place at Year 12. In

© NZCER

Bernstein's terms, we could say that the work of fostering discipline loyalty is stepped up a notch as students near the end of their secondary schooling. However, the redevelopment of the Years 1–13 science curriculum in the early 1990s (Ministry of Education, 1993) opened up new opportunities for integrated science to be taught at Years 12 and 13.

Against the background of this historical tension between integration and separation, some achievement standards have been developed to assess science learning within a discipline-specific tradition and some have been developed to assess similar content within a more integrated approach. For example, the achievement standard called Science 1.3 seemingly assesses similar learning to the combination of Biology 1.3 and Biology 1.8. This situation, with the ensuing plethora of available achievement standards, offers all sorts of prospects for the development of locally-redesigned courses in the sciences. Some schools are already offering such courses assessed by widely varying combinations of science and discipline-specific standards[16] (Hipkins and Neill, in press). While science HODs in the 6 *Learning Curves* schools are cautiously experimenting with limited combinations of Year 11 achievement standards, their courses retain a traditional overall structure and so we have included them in the traditional-discipline group for now. We note the prospect for more locally-redesigned science courses to emerge in the future.

Key finding: Contextually-focused courses

Building from a tradition of what were known as "applied" or "vocational" courses, all 6 *Learning Curves* schools offer English, mathematics, and science courses that differ from traditional-discipline and/or locally-redesigned courses in several key respects:

- Curriculum components are typically selected with links to the contexts of students' everyday lives, or their future potential employment and/or leisure, in mind.
- Courses offer a reduced number of credits, creating more flexibility and freedom for different types of learning experiences and varied pacing of learning.
- Courses reflect an emphasis on skills and "doing", rather than the recall of acontextual knowledge.
- Assessment of learning is exclusively or predominantly internally managed – students seldom sit national examinations.
- The division of the curriculum into topics may or may not reflect traditional partitioning of knowledge.
- Assessment is currently mainly by unit standards rather than achievement standards.

In Bernstein's terms, such courses are weakly framed. When determining pedagogy, the perceived learning needs of the students take precedence over the traditional curriculum emphasis on subject

[16] For example,, "Physical Science" courses that are assessed by combinations of chemistry, physics, and science standards but not biology, earth science, or astronomy standards; or "Biological Science" courses that are assessed by human biology, biology, and science standards but not standards from the physical and earth sciences; and so on.

© NZCER

initiation and the development of loyalty to subject traditions. The necessary pedagogical flexibility is gained by maintaining control of the content of assessments for qualifications within the school. Nevertheless, many such courses (including most of the courses we describe in this section) currently maintain strong traditional subject boundaries.

Most of the English and mathematics courses we describe are focused on achieving numeracy or literacy credits rather than on leading to mathematics and/or English courses at a higher level. However, we see a challenge to time-honoured assumptions of an academic/non-academic binary in operation here. It would be a mistake to judge contextually-focused courses as somehow inherently inferior to traditional-discipline courses – a default option only for those who have demonstrable learning difficulties. The characteristics we have noted for contextually-focused courses potentially align with recent forward-looking calls for changes in education that mirror changes which have already taken place in the structuring of knowledge in the social worlds beyond school (Gilbert, 2003). The types of courses envisaged in these calls for curriculum reform would challenge all students, including those currently judged as "most able".

In the 2002 report we noted the potential of the new qualifications regime to either consolidate or break down the so-called academic/vocational divide. While we have yet to see the development of contextually-focused courses that take full advantage of such potential in our 6 *Learning Curves* schools, we have chosen a name that removes the pejorative connotations of more traditional descriptions of these courses. A space is opened up to envisage courses that engage students in contexts of relevance to their lives, that perhaps cross discipline boundaries in the way of some locally-redesigned courses, and that also potentially offer the intellectual challenge more typically associated with traditional-discipline courses. In Section Eight we describe developments in technology courses that seem to be moving in such directions. They are not, however, without tensions and controversy.

The subject analysis

In 2002 the widest range of courses was offered in mathematics and this continues to be the case – at least "on paper". Five of the 6 schools offer 3 mathematics options at Year 11 and some continue to do so at Year 12. We report on these mathematics courses first. However, the analysis of the various English options that follows suggests that, *in effect*, 3 of the 6 *Learning Curves* schools also offer 3 English options at Year 12, although all 6 schools only described 2 options at both Years 11 and 12. We analyse the science options offered at Year 11 in each school. The sciences, like mathematics, become optional at Year 12. Whereas 81 percent of all the 2003 Year 12 students continued to take mathematics, only 54 percent continued to choose at least one science. In view of this, and for time and space reasons, we have not continued the analysis for the many Year 12 science courses offered.

In the first *Learning Curves* report, we briefly traced the evolution of the National Qualifications Framework (NQF) that underpins the NCEA reforms. It appears to have been anticipated that

© NZCER

"traditional subjects" would be assessed for the NCEA using achievement standards as these became available to replace unit standards (Hipkins and Vaughan, 2002a). As will become evident in what follows, this has not always been the case. Teachers are being selective in their choice of assessment tools for different courses. If an achievement standard is perceived to be the best tool for a situation, it will have been adopted. However, where teachers perceive that unit standards are a better means of assessing particular topics, skills, groups of students, these remain in use.

Varying the subject: mathematics courses

This section of the report describes the mathematics options that are being offered by the 6 *Learning Curves* schools at Years 11 and 12 in 2003. In 5 of the 6 schools 3 different mathematics options are offered at Year 11. At Year 12 all schools offer at least 2 options and 2 schools offer 3 options.

We begin with a brief overview of content included in the variously numbered achievement and unit standards. This simplifies the tables that follow whilst allowing readers to refer back if they wish to compare the scope of the topics covered with the various courses offered at each school and at Year 11 and Year 12.

Guide to the mathematics achievement standards

The following is a summary of the mathematics achievement standards offered at levels 1 and 2 of the NQF. Standards followed by an (E) are externally assessed in a national examination. Standards followed by an (I) are assessed within the school. Comparative credit values are indicative of relative lengths of time afforded to different topics within the school year.

Level 1 mathematics standards

1.1 (E) Use straightforward algebraic methods and solve equations (3 credits)

1.2 (E) Sketch and interpret linear or quadratic figures (3 credits)

1.3 (I) Solve problems involving measurement of everyday objects (4 credits)

1.4 (I) Use geometric techniques to produce a pattern or object (2 credits)

1.5 (I) Use straightforward statistical methods to explore data (3 credits)

1.6 (E) Calculate relative frequencies and theoretical probabilities (2 credits)

1.7 (E) Solve straightforward number problems in context (3 credits)

1.8 (E) Solve right-angled triangle problems (2 credits)

© NZCER

1.9 (E) Use geometric reasoning to solve problems (2 credits)

Level 2 mathematics standards

2.1 (E) Manipulate algebraic expressions and solve equations (4 credits)

2.2 (E) Sketch and interpret non-linear figures (3 credits)

2.3 (E) Find and use straightforward derivatives and integrals (4 credits)

2.4 (E) Solve problems using a coordinate geometry method (2 credits)

2.5 (I) Select a sample and make inferences from the data (3 credits)

2.6 (I) Simulate probability situations, and apply the normal distribution (2 credits)

2.7 (E) Solve straightforward problems involving sequences (2 credits)

2.8 (I) Solve practical trigonometry problems (2 credits)

2.9 (E) Solve straightforward trigonometric equations (2 credits)

Guide to the use of selected mathematics unit standards

Most of the schools use unit standards in the assessment of locally-redesigned and/or contextually–focused courses but they are less commonly used for traditional-discipline courses. Table 17 on pages 77 and 78 summarises the topics covered by the NQF unit standards used in the mathematics courses in the case study schools at Years 11 and 12. It provides an overview of variation in the content that is assessed by unit standards in the different schools and courses.

Patterns revealed by the table

Some standards are used at different year levels in different schools. These instances are highlighted by the use of grey shading of the relevant rows on the table. In a few instances a unit standard that has been used in a Year 11 locally-redesigned course is repeated as part of a Year 12 contextually-focused course, or the same standard is used in both these types of courses at the same year level.

The 9 most popular unit standards across the schools have a decidedly practical flavour. They focus on various aspects of number and computation (5224, 5225, 8489, 8490), on using money (5234), reading tables and figures (8491), and on the use of statistics (5230, 5232). Just one assesses knowledge of algebraic skills (5223). This pattern appears to reflect a view expressed by several of the HODs that algebra is the hardest aspect of mathematics for many students to grasp, and an area in which some students need to work very hard to succeed in order to continue on an academic mathematics pathway. Geometry and trigonometry are noticeably absent from these most popular choices.

© NZCER

Every HOD commented on their reasons for selecting the standards they use, and these comments, were grounded in their perspectives of the learning needs of their students. The range of standards available on the NQF has allowed them a wide range of choice and hence a great deal of flexibility in building courses for their students. The summary also illustrates how different are the courses experienced by students studying locally-redesigned and contextually-focused mathematics courses at the various schools. By contrast the traditional-discipline mathematics courses (and the locally-redesigned course at City School A) show a much higher degree of similarity – at least in terms of the standards used to assess students' learning.

© NZCER

Table 17 **Use of unit standards in locally-redesigned and contextually-focused mathematics courses**

No of std.	No of credits	Level 1: titles of standards	School, year level, type of course td = traditional-discipline, lr = locally-redesigned, cf = contextually-focused course A	B	C	D	E	F
64	2	Perform calculations for the workplace					11cf	
5223	2	Use formulae and equations to solve problems	12lr	11lr 12lr	11lr	11lr 12cf	11lr	11lr
5224	2	Use decimals and percentages to solve problems	12cf	12lr	11lr 11cf	11lr 11cf	11cf	11lr
5225	2	Use fractions, ratio, and proportion to solve problems	12cf		11lr	11lr 2cf	12lr	11lr
5226	2	Construct and use tables and figures	12cf		11lr		11cf	12lr
5227	3	Solve problems involving time and money	12cf	12lr	11lr		11cf	12lr
5228	2	Take measurements and use them in calculations to solve problems			11lr		11td 11lr	
5229	2	Use geometry to describe situations and solve problems			11lr	11lr	11lr	11cf
5230	3	Carry out a statistical investigation and interpret data		12lr	11lr	11lr 11cf	11td 11lr	12lr
5231	2	Use constructions and drawings			11lr		11lr	12lr
5232	2	Determine probabilities in practical situations	12lr	11lr		11lr 11cf 12cf	11lr	11cf
5234	3	Use calculations in money situations	12cf	12lr		12lr 12cf	11lr	12lr
5235	2	Use strategies to solve number problems			12 lr	12lr	11td 12lr	
5236	2	Use Pythagoras' Theorem and trigonometry to solve problems involving right-angled triangles		11lr	12lr	12lr	11lr 12lr	11lr
5237	3	Describe situations using transformations and loci					11td 11lr	
5238	4	Draw and describe figures involving 2 variables			12lr		11td 11lr	
5239	3	Describe patterns and solve problems and equations			12lr	12lr	11td	
5241	3	Use strategies to solve measurement problems					12lr	
5242	2	Determine probabilities					11lr	
7561	2	Demonstrate knowledge of the mathematics of number patterns					11td	
7565	2	Carry out and report on a given statistical investigation					12lr	
7568	2	Use formulae to solve problems and describe rates from figures					11td 12lr	
7571	2	Use simulation techniques to determine probability and solve problems					12lr	
8489	2	Solve problems which require calculation with whole numbers	11lr 1cf	11lr	11lr 11cf	11lr 11cf	11cf	11cf
8490	2	Solve problems using calculations with numbers expressed in different forms	11lr 11cf	11lr	11lr 11cf	11cf	11cf	11cf
8491	2	Read and interpret information presented in tables and figures	11cf 12lr	11lr 12lr	11cf	11cf	11cf	11cf

© NZCER

No of std.	No of credits	Level 1: titles of standards	School, year level, type of course td = traditional-discipline, lr = locally-redesigned cf = contextually-focused course A	B	C	D	E	F
8492	3	Use standard units of measurement	11cf	11lr	11lr 11cf	11cf		11cf
		Level 2: titles of standards						
5244	2	Demonstrate calculus skills					12td	
5245	2	Solve problems involving lines and points			12lr		12td	
5246	3	Manipulate algebraic expressions and use algebraic methods to solve problems					12td	
5248	2	Use sequences and series to solve problems				12lr	12td	
5249	2	Use networks to find optimal solutions to problems in geometry				12lr	12lr	
5250	2	Use probability techniques to solve problems					12td	
5251	3	Solve problems modelled by triangles			12lr	12lr	12td 12lr	
5252	3	Derive angle properties of circles and use them to solve mathematical problems					11td	
5253	3	Sketch and describe figures					12td 12lr	
7560	2	Find and use derivatives to solve problems involving rate of change					12lr	
18237	2	Perform calculations for the tourism and travel industry					12lr	
		Level 3: titles of standards						
5255	3	Use trigonometry to solve problems					12td	
5260	2	Find and use derivatives to solve problems involving rate of change					12td	
5261	2	Use integral calculus to solve problems					12td	

Grey-shaded rows denote standards that are taught at both Year 11 and Year 12 across the 6 schools.

© NZCER

Year 11 traditional-discipline courses in mathematics

Table 18 below summarises the nature of assessment of the mathematics courses typically offered to the students considered capable of achieving in mathematics at level 1 of the NQF during their Year 11 school year. The grey-shaded columns are the internally assessed achievement standards. All other standards are assessed in one 3-hour national examination at the end of the school year.

The table shows that the Year 11 courses offered in 5 of the 6 schools were almost identical – at least in terms of what and how they were assessed.[17] In 5 of the 6 schools assessment for qualifications was exclusively by achievement standards and they all offered all 3 internally assessed standards to their students in traditional-discipline courses. Town School E, with its school-wide focus on internal assessment and multiple national certificates, was the exception.

Sixty-seven percent of all Year 11 students who completed the student questionnaire were taking one of these traditional-discipline mathematics courses in the 2003 year.

Table 18 **Composition of the 2003 traditional-discipline Year 11 mathematics courses**

	Mathematics achievement standards offered									**Unit standards offered**
School	**1.1**	**1.2**	**1.3**	**1.4**	**1.5**	**1.6**	**1.7**	**1.8**	**1.9**	
City School A 22 credits	✓	✓	✓	✓	✓		✓	✓	✓	
City School B 24 credits	✓	✓	✓	✓	✓	✓	✓	✓	✓	
City School C 24 credits	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Town School D 24 credits	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Town School E 26 L1 credits 3 L2 credits						✓		✓		Balance of course is equivalent unit standards
Town School F 24 credits	✓	✓	✓	✓	✓	✓	✓	✓	✓	

NB. Grey-shaded columns are internally assessed achievement standards

In 2002, City School A taught a course that was assessed by all 6 external achievement standards. However, the HOD noted that only 22 students actually sat all 6 of these standards, and some of them did not achieve as well as the students who chose to sit only 5 standards. In 2003, the school dropped one external standard from its course (Probability – AS 1.6). This was a strategic decision intended to ease time pressures on the students in the external examination situation. The HOD believed that students would be better able to demonstrate their year's achievement in mathematics if they only faced 5 sets of questions in the 3 hours rather than 6. Achievement

[17] Courses are *sequenced* differently in each school. One HOD noted that they had reordered their course for 2003 because students did less well in the final topic they studied in 2002. Another HOD noted that they ordered the course so that there was one internally assessed standard in each of the first 3 terms of the school year, with a more concentrated examination focus in the final term.

© NZCER

standard 1.6 was dropped because there are 2 achievement standards that address the topic of probability and statistics at level 2, allowing the students to pick up coverage of this aspect during their Year 12 course.

While Town School E preferred to use unit standards to assess learning in all subjects wherever possible, the Year 11 students in the 2003 traditional-discipline mathematics course were to sit the external examination for achievement standards 1.6 (probability) and 1.8 (right angled triangles). In the opinion of the HOD these 2 standards were "better" than their equivalent unit standards, although she acknowledged that there was ongoing debate about this. One class of "top" Year 10 students in this school was studying the traditional-discipline mathematics course in 2003, although the HOD worried that some students would not have the maturity to cope with the demands of the course. One of the unit standards offered to this Year 10 class was at level 2 of the NQF.

Year 11 locally-redesigned courses in mathematics

There was more variability in the courses the 6 schools offered for students they identified as likely to struggle with the traditional-discipline course, but who they saw as able to cope with more than a contextually-focused course. This variability is summarised in Table 19.

Twenty-one percent of all Year 11 students who completed the student questionnaire were taking one of these locally-redesigned mathematics courses in 2003.

Table 19 shows that the course offered by City School A was very different to those offered by the other 5 schools. The HOD insisted that this was "not a vocational course". Rather, over 2 full years, students would study essentially the same course as the traditional-discipline students would study in 1 year. In addition to the achievement standards, these students were introduced to aspects of the course that the HOD believed they would find more difficult by beginning with a relevant unit standard.

© NZCER

Table 19 **Composition of 2003 locally-redesigned Year 11 mathematics courses**

School	Mathematics achievement standards offered									Unit standards offered*
	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	
City School A First year – 17 credits			✓	✓			✓	✓	✓	2 unit standards
Second year – 17 credits	✓	✓			✓	✓				3 unit standards
City School B 24 credits			✓	✓	✓					7 unit standards
City School C 27 credits	Full unit standards course – *see* Table 17 for details									
Town School D 21 credits			✓	✓						7 unit standards
Town School E 28 credits	Full unit standards course – *see* Table 17 for details									
Town School F 17 credits			✓	✓	✓					4 unit standards

NB. Grey-shaded columns are internally assessed achievement standards.
* Specific details of unit standards are shown in Table 17.

The locally-redesigned courses at City School B and Town School F offered all 3 internally assessed achievement standards and Town School D offered 2 of these. In all 3 schools the balance of the course comprised a selection of unit standards. Each course was, accordingly, fully internally assessed. Table 17 shows that there was considerable overlap in the unit standards chosen by each school. Four of the unit standards were common to 2 schools and one of these – *Use formulae and equations to solve problems* – had been selected by all 3 schools for their alternative course at Year 11.

City School C and Town School E offered locally-redesigned courses that were fully assessed by unit standards. The unit standards selected for the locally-redesigned mathematics course at Town School E had some overlap with those selected for assessment of the traditional-discipline students and at City School C they had considerable overlap with those selected for the contextually-focused course (*see* Table 17). The HOD of Town School E said that the locally-redesigned course had a smaller proportion of algebra and trigonometry than the traditional-discipline course, and the unit standards used to assess these topics were set at a lower-level overall.

One HOD commented that classes studying locally-redesigned courses were smaller than the traditional-discipline classes. With just 16–20 students per class, it was possible to offer more individualised learning support. Another HOD noted that many students in the locally-redesigned class were from Pasifika backgrounds and the teacher was actively working to offer learning experiences relevant to their perceived learning styles.

© NZCER

Contextually-focused Year 11 mathematics courses

In 2003, 5 of the 6 schools offered a contextually-focused course for students who, in their judgment, would not otherwise achieve in mathematics at level 1. City School B was the exception, continuing to offer 2 alternatives at Year 11, as it did in 2002. The contextually-focused courses were intended to support students to achieve the 8 numeracy credits required in order to be awarded their National Certificate in Educational Achievement (NCEA) at level 1.

Eight percent of students who completed the Year 11 questionnaire were taking a contextually-focused mathematics course in the 2003 year.

In all 5 of the schools these courses were assessed by a small number of strategically selected unit standards (*see* Table 17) and the occasional achievement standard. The courses typically covered less content than the traditional-discipline and locally-redesigned courses, and offered fewer credits. Differences between credit totals offered in the various courses in schools are compared in Table 20.

Table 20 **Variability in credits offered in mathematics course options**

	Total number of credits per course		
	Traditional-discipline course	**Locally-redesigned course**	**Contextually-focused course**
City School A	22	17/17 (year 1/ year 2)	12
City School B	24	24	N/A
City School C	24	27	11
Town School D	24	21	16
Town School E	29	28	15
Town School F	24	17	16

Traditional-discipline Year 12 mathematics courses

In 2003, 59 percent of Year 12 students were taking traditional-discipline mathematics courses at level 2 of the NQF. As at Year 11, 5 of the 6 schools were offering traditional-discipline Year 12 courses based on complete or near complete coverage of the areas assessed by the achievement standards available at this level. The specifics of each course are shown in Table 21.

As Table 21 shows, City School A and Town School D were offering the full suite of available level 2 achievement standards for mathematics in 2003. One HOD pointed out that students were then required to attempt 6 separate questions within a 3-hour timeframe – one for each of the 6 externally assessed standards. She believed that students should have 45 minutes per standard, and worried that they were going to need to be taught how to cope with the pressure that would be created by attempting 6 standards in 3 hours. Similar concerns were expressed by some mathematics HODs in the *Shifting Balances* project (Hipkins and Neill, in press).

© NZCER

Table 21 **Composition of the traditional-discipline 2003 Year 12 mathematics courses**

School	Mathematics achievement standards offered									Unit standards offered
	2.1	**2.2**	**2.3**	**2.4**	**2.5**	**2.6**	**2.7**	**2.8**	**2.9**	
City School A 24 credits	✓	✓	✓	✓	✓	✓	✓	✓		
City School B 20 credits	✓	✓	✓	✓	✓	✓	✓			
City School C	✓	✓	✓	✓	✓	✓			✓	Unit standard in place of 2.8
Town School D 24 credits	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Town School E 17 L2 Credits 7 L3 credits	Entire course is unit standards-focused – *see* Table 17									
Town School F 24 credits	✓	✓	✓	✓	✓	✓	✓	✓		

NB. Grey-shaded columns are internally assessed achievement standards.

The HOD of City School C did not think the content assessed by achievement standard 2.7 was required for progress to level 3 and so he chose to drop this topic from the course.[18] He believed that this freed up more time to devote to other aspects of the course. Neither did City School C offer the internally assessed trigonometry standard because the HOD believed that success in this topic would be easier to achieve when assessed by the equivalent unit standard.

City School B did not offer any *assessment* opportunities in trigonometry to its Year 12 students in 2003. Both the internally (2.8) and externally (2.9) assessed trigonometry standards were dropped. This did not mean that the students would not learn this aspect of their mathematics course – the HOF clearly differentiated between topics *taught* and topics *assessed*. She said that the 2002 level 1 assessment in trigonometry was “unnecessarily hard” and did not include one topic that was covered in the range notes (vectors). In view of the uncertainties created by these factors the school would wait and see where this topic goes before revisiting this decision at the end of the 2003 year. In any case, the HOF noted that offering 24 credits in mathematics at Year 12 was “overkill” in view of the total number of credits required to achieve a level 2 NCEA certificate.

Some students at City School B were repeating achievement standard 1.1 as well as studying 2.1 – both algebra standards. The HOF noted that algebra is a “weakness for some students” and they wanted to improve in this area before facing calculus in Year 13.

The HOD of Town School F had eased time pressure in his course by choosing not to actively teach the content assessed by achievement standard 2.9 – trigonometric equations. However, students who were willing to study this topic independently would be allowed to enter for this

[18] Some students were, however, able to sit the examination for this topic if they felt they had the necessary skills and knowledge.

© NZCER

standard. At the time of the interview he estimated that between 10 and 12 students might choose to do so.

Again, Town School E followed its own path, in keeping with its school vision. For the 2003 year the HOD was sticking with the unit standards-focused course that was already in existence. While most of the unit standards selected were at level 2 on the NQF, 3, worth a total of 7 credits, were set at level 3. The HOD was considering adopting achievement standards 2.7 and 2.9 in the 2004 year but had not yet made up her mind.

Locally-redesigned Year 12 mathematics courses

In 2003, 16 percent of Year 12 students were taking locally-redesigned courses in mathematics. As in Year 11, these courses were more varied in their composition than the traditional-discipline courses at Year 12. However, the locally-redesigned courses, while "Year 12" in name and position within each school's subject-choice structure, were either set fully at level 1, or were multilevel courses with assessment components drawn from both levels 1 and 2 on the NQF. Their various structures are summarised in Table 22 on the next page.

As Table 22 shows, students at City School A who might in the past have been studying a contextually-focused mathematics course at Year 12 had instead moved into the second year of their locally-redesigned level 1 course (*see* above for details). The HOD noted that she would like to begin another 2-year course option at Year 12. This course would be a locally-redesigned level 2 course that would span Years 12 and 13 and would be intended for those students who had successfully completed the traditional-discipline course at level 1 but who "won't cope with calculus". It remains to be seen whether the HOD is able to fulfil this vision for yet another mathematics pathway in her school.

© NZCER

Table 22 **Composition of locally-redesigned mathematics courses at Year 12 in 2003**

	Course components at level 1		Course components at level 2	
	Achievement standards	**Unit standards***	**Achievement standards**	**Unit standards**
City School A L1 credits	Students who could take such a course are completing the second year of their level 1 alternative course (*see* above)			
City School B 6 L1 credits 13 L2 credits	1.1, 1.2		2.3, 2.4, 2.5, 2.6, 2.7	
City School C 16 L1 credits 5 L2 credits	1.4, 1.5	4 unit standards at this level		2 unit standards at this level
Town School D 10 L1 credits 12 L2 credits		4 unit standards	2.5, 2.6	3 unit standards
Town School E 15 L1 credits 12 L2 credits		7 unit standards at this level		5 unit standards at this level
Town School F 16 L1 credits 2 L2 credits	1.1	5 unit standards	2.7	

* *See* Table 17 for details.

For the first time in 2003, City School B offered a mixed level 1 and 2 course as a locally-redesigned course at Year 12. It contained 2 internally assessed achievement standards and 5 externally assessed achievement standards (*see* Table 22). The HOF believed that students would be better able to demonstrate their learning in the 5 externally assessed standards because they would have 6 hours in which to do so if they choose to use all the time available to them. They would address just 2 standards in the examination at level 1 and the other 3 in the level 2 examination.[19] Algebra was chosen as a level 1 standard to include because, in this school's experience, it was the topic that students were most likely to fail at Year 11. Part-way through the first year of this course the HOF was "fairly comfortable we've got it [the course composition] right".

Town School F was also offering a newly constructed locally-redesigned Year 12 course that combined one level 1 and one level 2 externally assessed achievement standard with a selection of unit standards at level 1. In common with City School B, algebra was seen as the important level 1 topic to repeat and this was then extended to sequences and series at level 2. The unit standards chosen had a practical focus. Topics included figures and tables, money, statistics, and constructions and drawings (*see* Table 17). While the school offered a contextually-focused course at Year 12 in the past, the HOD noted that it did not provide assessment for qualifications and "students want credits".

[19] Both examinations are 3 hours long.

© NZCER

City School C opted for a course that combined 2 internally assessed level 1 achievement standards with a mixture of both level 1 and level 2 unit standards. This course was thus fully internally assessed. Town School E continued to use a unit standards course that combined level 1 and level 2 standards with a practical orientation (*see* Table 17).

A contextually-focused Year 12 mathematics course

City School A offered a contextually-focused course to Year 12 students who had completed a similar type of course at Year 11. The 12 credit course had a very practical focus on number, measurement, money, figures and tables and statistics This course mostly offered different unit standards to the Year 11 course, but they were still set at level 1 (*see* Table 17).

Looking ahead to Year 13

In 2004, the NCEA is being implemented at Level 3, with the endorsement of the PPTA. At the time of the 2003 interviews, several HODs looked ahead, and told us how they could see their current option structures within mathematics extending across all 3 levels of the senior secondary school in the years to come.

The HOD of City School A saw the potential for a 2-year level 2 course that would span Years 12 and 13 in much the same way as the present locally-redesigned course spans Years 11 and 12. Such a course would target students who had completed the full NCEA course at level 1 but who were likely to struggle with mathematics at Years 12 and 13. (Several HODs noted that there is a "big leap" between the levels of mathematics taught at Year 11 and at Year 12).

The HOF of City School B speculated on how the school might structure level 3 courses for 2004. She questioned whether 2 full courses at Year 13 were really necessary and speculated that, depending on student numbers, the school might offer a "blended" level 3 course, assessed by a mixture of calculus and statistics achievement standards. Such a course would clearly fit the criteria we have described for a locally-redesigned course, and would be likely to be as academically challenging as either traditional-discipline course (mathematics with statistics, mathematics with calculus) at Year 13. It would have the advantage of freeing up one timetable line to make space for the choice of another subject.

For other Year 13 students, City School B might offer a course that mixes selected level 3 standards, including those that are internally assessed, with level 2 algebra standards – a different sort of locally-redesigned course, to meet a different set of student learning needs. These were decisions yet to be made at the time of the 2003 interview although the HOF pointed out that they would need to be made well before the end of the year because of publication requirements for the 2004 student handbook. Looking further ahead, the HOF was hoping to offer a mathematics/music level 3 combination in 2005. Such a course would include complex numbers and exponential figures along with harmonies and frequencies and computer-generated music.

© NZCER

Completely new courses such as this need a longer lead in time and, even at the time of the interview (in May 2003) it was already too late to initiate such a course in 2004.

When speculating about possible new developments at Year 13, the HOD of Town School D commented that Year 12 and 13 students mix better than Years 11 and 12 students. She foresaw a possible Year 13 "mop up" course with students studying similar topics, but at different levels, depending on their individual needs. She also speculated that Year 12 students who had completed the contextually-focused course at that level might move up to the locally-redesigned course at Year 12.

The HOD of Town School E expressed the hope that the school would be able to offer 3 Year 13 courses in the near future.

Varying the subject: English courses

As in mathematics, the 6 *Learning Curves* schools have used the NCEA implementation to creatively structure a range of options for students with different learning needs in English. The solutions they have arrived at differ in some interesting respects from those described above for meeting students' mathematics learning needs. However, as in mathematics, the traditional-discipline courses have the strongest degree of similarity, with most adhering closely to the full suite of achievement standards at both levels 1 and 2 of the NQF.

Guide to the English achievement standards

The following is a summary of the English achievement standards offered at levels 1 and 2 of the NQF. Standards followed by an (E) are externally assessed in a national examination. Standards followed by an (I) are assessed within the school. Comparative credit values are indicative of relative lengths of time afforded to different topics within the school year.

Level 1 English standards

1.1 (I) Produce creative writing (3 credits)

1.2 (E) Produce formal writing (3 credits)

1.3 (E) Read, study and show understanding of extended written text(s) (2 credits)

1.4 (E) Read, study and show understanding of a number of short written texts (2 credits)

1.5 (E) View/listen to, study and show understanding of a visual or oral text (2 credits)

1.6 (E) Read and show understanding of unfamiliar texts (3 credits)

1.7 (I) Deliver a speech in a formal situation (3 credits)

© NZCER

1.8 (I) Produce a media or dramatic presentation (3 credits)

1.9 (I) Research, organise and present information (3 credits)

Level 2 English standards

2.1 (I) Produce crafted and developed creative writing (3 credits)

2.2 (I) Produce crafted and developed formal transactional writing (3 credits)

2.3 (E) Read, study and analyse extended written text(s) (3 credits)

2.4 (E) Read, study and analyse short written texts (3 credits)

2.5 (E) View/listen to, study and analyse a visual or oral text (3 credits)

2.6 (E) Read unfamiliar texts and analyse the ideas and language features (3 credits)

2.7 (I) Deliver a presentation using oral and visual language techniques (3 credits)

2.8 (I) Investigate a language or literature topic and present information in written form (3 credits)

Guide to selected English unit standards

As in mathematics, unit standards mainly feature in the assessment of locally-redesigned and contextually-focused courses. They are occasionally used for traditional-discipline courses in the 6 *Learning Curves* schools, with the most popular choice being the unit standard for wide reading. Table 23 summarises the topics covered by the NQF unit standards that have been selected for use in the various English courses in the case study schools at Years 11 and 12. It provides an overview of variation in the content that is assessed by unit standards in the different schools and courses. As with Table 17, the grey-shaded rows indicate level 1 unit standards that are used at both Year 11 and Year 12, sometimes in different schools and sometimes in the same school.

© NZCER

Table 23 **Use of unit standards in English courses**

No of std.	No of credits	Level 1: titles of standards	School, year level, type of course td = traditional-discipline, cf = contextually-focused					
			A	B	C	D	E	F
101	3	Develop and use keyboarding skills to enter text					11 cf	
1273	4	Express own ideas in writing						12 cf
2977	4	Read texts for practical purposes		11cf				12 cf
3483	4	Fill in a form			12cf			
3501	4	Apply listening techniques	11cf					
8808	2	Read an inclusive range of written texts and record the reading experience	11 cf	11td 12cf	11td 11cf		11td 11cf 12cf	11 cf 12 cf
8810	2	Read an inclusive range of visual texts and record the experience						11cf 12cf
8811	3	Collect information using a range of oral, written, and visual sources and methods	11 cf			12cf	11td 11cf	11 cf
8812	4	Produce transactional written text in simple forms					11td 11cf	
8815	3	Perform interpretations of poetic text						12cf
8816	3	Deliver transactional oral text				12cf	11td 11 cf	
8817	2	Listen attentively during and interact in discussion				12cf	11td 11 cf	11 cf
8826	5	Produce poetic written text in complex forms	12cf			11cf		
10792	5	Write formal personal correspondence		11cf 12cf	11cf 12cf	11cf 12cf		11 cf 12 td 12 cf
12411	3	Explore language and think critically about transactional written text				11cf		
12416	3	Explore language and think critically about static images				11cf		
12417	2	Present a static image using verbal and visual features				11cf		11 cf 12 cf
1273	4	Express own ideas in writing			12cf			
1293	2 C	Participate in an informal one-to-one face-to-face interview			12cf			

© NZCER

No of std.	No of credits	Level 2: titles of standards	School, year level, type of course td = traditional-discipline, cf = contextually-focused A	B	C	D	E	F
3492	3	Write a short report			12cf			
2989	4	Read and assess texts to gain knowledge				11cf		
8825	5	Produce transactional written text in complex forms				12cf		
8826	5	Produce poetic written text in complex forms	12cf					
8827	4	Perform interpretations of poetic texts and evaluate performance						12 cf
8829	2	Promote discussion of ideas and develop the content of discussion						12 cf
12426	3	Present static images combining verbal and visual features	12 cf					12 cf
12905	4	Read an inclusive variety of written texts and record the reading experience		12 td				12 td 12 cf

NB. Grey-shaded rows indicate unit standards that are offered at both Year 11 and Year 12, either in the same or in different schools.

© NZCER

Far fewer unit standards in total are used for assessing English courses than are used for mathematics. However, as in mathematics, the most popular standards have a decidedly practical flavour.

Year 11 traditional-discipline courses in English

Table 24 shows a broadly similar pattern to that reported for the level 1 traditional-discipline courses in mathematics. Most of the *Learning Curves* schools were offering all or most of the level 1 English achievement standards to the 2003 Year 11 students who were considered capable of completing a full Year 11 course.

Whereas 67 percent of the Year 11 students were studying traditional-discipline mathematics courses in 2003, 86 percent of the cohort who responded to the questionnaire were studying traditional-discipline English courses. In part, the difference may reflect the fact that all 6 schools offered 2 English options whereas 5 of them offered 3 mathematics options at Year 11.

Table 24 **Composition of the traditional-discipline Year 11 English courses**

	English achievement standards offered									Unit standards offered
School	**1.1**	**1.2**	**1.3**	**1.4**	**1.5**	**1.6**	**1.7**	**1.8**	**1.9**	
City School A 21 credits	✓	✓	✓	✓	✓	✓		✓	✓	
City School B 23 credits	✓	✓	✓	✓	✓	✓	✓	✓		1 unit standard (wide reading)
City School C 23 credits	✓	✓	✓	✓	✓	✓	✓	✓		1 unit standard (wide reading)
Town School D 24 credits	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Town School E 24+ credits	✓		✓	✓	✓	✓		✓		5 unit standards – *see* Table 23
Town School F 27 credits	✓	✓	✓	✓	✓	✓	✓	✓	✓	1 unit standard (wide reading)

NB. Grey-shaded columns are internally assessed achievement standards.

In City School A the students completed their speeches for achievement standard 1.1 at the end of Year 10, creating more time in the Year 11 course for the other areas of study.

Town School E had decided they would only select 4 of the achievement standards from the 6 indicated. Students in this school were also to have the opportunity to be assessed by 5 unit standards.

As Table 24 shows, 3 schools opted to remove research skills from their Year 11 courses (AS 1.9). In the opinion of one of these HODs, this achievement standard is a “nightmare” with too many assessment requirements that are hard to work through and a pedantic assessment structure. Another HOD expressed similar sentiments, describing this achievement standard as “complex and nit picky”. Both HODs noted that research is assessed across the curriculum with one saying that students “get researched to death in their other subjects” and that if the HODs of these

© NZCER

subjects have “got marking schedules they’re happy with – fine”.[20] The third HOD cited time reasons and a preference to use the credits for encouraging reading.

In City School B, credits were made up by the addition of a unit standard that assesses students’ wide reading of a range of text. The HOF expressed disappointment that no achievement standard was developed to assess this important aspect of English. City School C and Town School F also offered this unit standard. Town School E had included this unit standard in the 2002 course but dropped it from the 2003 course. Reflecting on their assessment of wide reading at the end of the 2002 year, the HOD felt they had set up a “recipe for disaster asking boys to work that way”. The school had altered assessment of wide reading into “smaller discrete chunks”.

The HOD of Town School F described a reordering of the 2003 traditional-discipline course, based on previous experiences. In 2002 the course began with an internally assessed standard that some students did not achieve. The HOD said that this was a very demotivating experience for these students to have so early in the year. In 2003 the course started with short text (1.4 external) followed by creative writing (1.1 internal). These topics were chosen to generate motivation and interest and the HOD felt she had better “links and direction” in the course. This school is one of 3 that offered the unit standard for wide reading in 2003. However, unlike City Schools B and C, the additional credits offered by this unit standard pushed the total on offer at Town School F to 27 – at least for students who took up every assessment opportunity.

One HOD said they would like to be able to offer 3 alternatives, as happens in mathematics. In the opinion of this HOD some students were not achieving for behavioural reasons. These students took time away from those who really did need help with their English learning, and should not be in the same class.

Year 11 contextually-focused courses in English

In contrast to the situation reported above for mathematics, just 11 percent of all responding Year 11 students were studying in other than a traditional-discipline English course in 2003. (The Figure for mathematics is 30 percent when locally-redesigned and contextually-focused courses are combined.) As Table 25 shows, these courses have the broad characteristics of what we have called contextually-focused, as opposed to locally-redesigned, options. Across 5 of the schools, just 3 achievement standards were offered to these English students – all of them internally assessed and practically focused. City School A was the exception, offering 2 externally assessed achievement standards. The balance of each course is made up of unit standards that mainly focus on the application of skills in contexts beyond educational settings (for example, “read texts for practical purposes” or “write formal personal correspondence” – *see* Table 23). Some

[20] Interestingly, the HODs of other subjects told us that students had opportunities to be credited for research skills in English. It appears that no clear differentiation of specific types of research skills in different discipline contexts was being seen or assessed at the time of the research.

© NZCER

combinations of standards may have been chosen to create a mix that minimises the requirement for assessment via formal writing.

Four of the courses offer considerably less credits than the traditional-discipline courses, and appear to be focused on allowing students to gain "literacy" credits. However, this is not the case in Town Schools E and F.

Table 25 **Contextually-focused Year 11 courses in English**

School	**English achievement standards offered** 1.1	1.4	1.5	1.7	1.8	**Unit standards offered (*see* Table 23 for details)**
City School A 11 Credits		✓	✓			2 unit standards
City School B 9 credits						2 unit standards
City School C 10+ credits				✓	✓	1 unit standard NZ Certificate in English
Town School D 8 L1, 4 L2 credits	✓					4 unit standards – one at level 2
Town School E 18 credits						5 English unit standards 1 core generic standard
Town School F 20 credits				✓		6 unit standards

The HODs appeared to view the learning needs of students who were completing contextually-focused English courses in a similar light to the learning needs of the students who were completing contextually-focused mathematics courses. Several schools explicitly stated that the focus of their contextually-focused English courses was on achieving the literacy credits required to gain a level 1 NCEA certificate. For example, City School B's 2003 subject-choice information stated that this course "offers students a chance to meet the literacy requirements for NCEA and an opportunity to gain self respect, self reliance and a sense of direction and achievement".

Year 12 traditional-discipline courses in English

Table 26 shows a broadly similar pattern to that reported for the level 1 traditional-discipline courses in English. Most of the *Learning Curves* schools were offering all or most of the level 2 achievement standards to the Year 12 students who were considered capable of completing a traditional Year 12 course. Whereas 59 percent of the Year 12 students were studying traditional-discipline mathematics courses in 2003, 77 percent of the cohort who responded to the questionnaire were studying traditional-discipline English courses.

© NZCER

Table 26 **Composition of the traditional-discipline Year 12 English courses**

School	English achievement standards offered								Unit standards offered
	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	
City School A 21 credits	✓	✓	✓	✓	✓	✓		✓	
City School B 23 credits	✓	✓	✓	✓	✓	✓	✓	✓*	1 unit standard (wide reading)
City School C 24 credits	✓	✓	✓	✓	✓	✓	✓	✓	
Town School D 24 credits	✓	✓	✓	✓	✓	✓	✓	✓	
Town School E	Not applicable – doing Sixth Form Certificate in 2003, moving to NCEA in 2004								
Town School F 27 credits	✓	✓	✓	✓	✓	✓	✓	✓	2 unit standards (wide reading and formal correspondence)

* 2.8 is used as an "extension" subject for some students.
NB. Grey-shaded columns are internally assessed achievement standards.

One HOD described the full 24-credit Year 12 course as "huge", although she pointed out that the previous Sixth Form Certificate required a similarly heavy workload. She was exploring ways to carry out several different assessments based on one piece of literature, or even one piece of student work, but felt she needed to be more familiar with the "full NCEA course" before she could start making such changes.

As in mathematics, the HODs reflected on patterns of success in the 2002 level 1 courses and they had made, or were considering making, level 2 decisions that take these patterns into account. One HOD regretted that static images are not part of the level 2 suite of achievement standards. She said that the school's students did particularly well in that area and students like the chance to do some "hands-on" art or design work as part of their English programme. At the time of the 2003 interviews she was pondering ways to "broadly re-interpret" achievement standard 2.7, usually set in a drama or body language context, so that students could learn this topic within the visual language context which they enjoy.

Three HODs noted the challenge that formal writing poses for some students. In 4 schools, both Year 11 and Year 12 2003 courses were making this a particular focus of the internal assessment programme. Another HOD thought there had been a "huge change" in skill levels in this area. In her opinion, the students had shown improvement in "one big jump". In Year 12 in 2003, they were showing changed behaviours such as using dictionaries to check spelling, even when they were writing creatively.

Other types of Year 12 courses in English

Three types of provision were made for the learning of the 2003 Year 12 students who would have been seen as "failing" their English under the previous School Certificate system.

© NZCER

In 3 of the *Learning Curves* schools the English departments offered a flexible multilevel arrangement that kept such Year 12 students in classes with their peers while providing opportunities to revisit level 1 learning in the various course components as necessary. These schools effectively offered 3 types of options in English, as happens in mathematics, even though their subject-choice booklets named only 2.

City School A offered the multilevel learning model described next (effectively a combination of some features of both traditional-discipline and locally-redesigned options) and also a locally-redesigned course. City School B and Town School F both offered the multilevel model and a contextually-focused course. City School C and Town School E also offered a contextually-focused course, but not the multi level option.

Provision for multilevel learning in English at Year 12

The locally-redesigned Year 12 mathematics courses described above were designed to meet the needs of Year 12 or 13 students who had yet to achieve the number of level 1 credits they needed by offering courses that combined strategically selected level 1 and level 2 achievement or unit standards. By contrast, in their English classes, students in 3 *Learning Curves* schools were given similar opportunities *within* the traditional-discipline courses. This was made possible by a greater fluidity of assessment level arrangements in English than appears to be possible in mathematics. This arrangement was described by the HODs of City Schools A and B, and of Town School F.

Illustrating how this can work, these HODs described a new arrangement for 2003 that was allowing most students at both Years 11 and 12 to be studying essentially the same English curriculum area during any one block of time. In the opinion of one of these HODs, such an arrangement is possible in English because it has a “skills” rather than a “content” focus. For internally assessed achievement standards, students were to be able to choose whether they would have their learning assessed using the level 1 or the level 2 criteria, because the relevant assessment events were co-ordinated. Similarly, in all 3 schools, the Year 12 students were going to be allowed to opt for examinations set at level 1 or level 2 for the various external standards. One HOD noted that this had worked “brilliantly” for the practice external assessment that they had completed. At the time of the interview (in May) the arrangement was yet to be tested on an internally assessed standard.

One school also planned to offer dual assessment opportunities for most internal English achievement standards. For example, the skill of speaking might be assessed once in the context of a monologue and a second time in the context of a formal speech. Hard-working students could, in theory, pick up any level 1 standards they had missed the year before, and still achieve a level 2 standard in the same skill area during the second assessment opportunity.

As well as providing for flexible levels of learning, one HOD noted an advantage if classes needed to be rearranged, or if a student changed to a different timetable line because of a change in another subject area. With each class working in step, this situation would not cause disruption

© NZCER

to the English programme for the affected students. The HOD also noted the advantage to the staff when they talked collegially about their work in progress.

While greatly increasing flexibility to provide for the learning needs of a range of students, the fluidity of assessment possibilities was not without some problems. The HOD who mentioned dual assessment chances also noted that some students were “opting out” for the first assessment event, staking all their chances on the second. Such students were not allowed to remain in class to observe others being assessed and “we end up with 9 kids in the corridor”. Another HOD worried that students could go into a level 1 external examination to sit just 2 questions, and a level 2 examination, to sit one more. She wondered if this would be disruptive to students who wanted to be in the examination room for the full 3 hours.

A different type of issue was raised by the HOD who noted that printed forms used by schools for formal reporting of progress to parents tend to be set at one year level. Students taking multilevel courses also need multilevel report forms. This HOD also commented on the additional workload for teachers generated by mixed-level assessment practices such as those described above.

One locally-redesigned English course at Year 12

In 2003, City School A also offered a Year 12 course that was assessed by 4 level 1 achievement standards (1.1, 1.3, 1.4, 1.5), 2 level 2 achievement standards (2.4, 2.5), and 2 unit standards (8826, 12426 – *see* Table 23). This combination potentially yields 8 level 1 credits from internal assessment and 6 from external assessment, along with 3 level 2 credits from internal assessment and 6 from external assessment – 23 credits altogether.

Contextually-focused English courses at Year 12

City Schools B and C and Town Schools E and F offered contextually-focused courses. City School B’s course offered 11 credits and was assessed by 3 unit standards (*see* Table 23) with a very practical focus. The HOD of Town School F described a similar course at Year 12. Assessment of the course was to be chosen to meet student individual needs from a selection of achievement standards (1.1, 1.7, 2.1, 2.2, and 2.7 – all internally assessed) and/or level 1 unit standards and level 2 unit standards (*see* Table 23). In both schools the students who chose these courses were seen as those who would be the least likely to gain NCEA credits and City School B continued to offer a Senior Certificate in Practical English in 2003.

The course at City School C was also very practically focused, with 4 unit standards set at level 1 and 1 at level 2 (*see* Table 23 for details). Students in this course also studied for a level 2 NZ Certificate in English. They were to be given another opportunity to try for the level 1 achievement standards for speech and static image if they had not yet gained these.

Town School E continued to offer a unit standards-focused course set by the English Society of New Zealand with an emphasis on:

© NZCER

> Short modules and the practical communication skills of the workplace. It includes note taking and report writing, formal letter writing, research and using technology to communicate. (Town School E, course booklet)

Varying the subject: Year 11 science courses

This section continues the discussion about variation in the types of learning experiences students can have within a particular subject in each school. Here science is the spotlight, particularly at Year 11 when science is still compulsory in 5 of the 6 *Learning Curves* schools.

The section begins with a brief overview of the types of choices of assessment and unit standards that are available to science HODs as they design their courses. Selection from amongst these standards is then described for the 2003 Year 11 traditional-discipline courses in science.

For those students who have not chosen traditional-discipline courses there is an option to study a contextually-focused course that draws heavily on the *NZASE Certificate in Science* resources, assessed with a suite of purposefully developed unit standards. Because of their similarity, these courses are not described individually. The proliferation of options at Year 12 makes it impractical to continue the detailed analysis of the nature of each science subject. Discussion of the nature of these courses is, accordingly, more general.

The wide range of available standards

Potentially science teachers have a great deal of freedom to construct quite different courses to meet the learning needs of different groups of students. At the time the achievement standards were being developed, the decision was taken to perpetuate the existing situation where levels 6–8 of *Science in the New Zealand Curriculum* co-exist with levels 1–3 of *Biology/Chemistry/ Physics in the New Zealand Curriculum* documents. Thus full suites of achievement standards were developed for all 3 of these subjects separately, and a science achievement standard in each of these 3 discipline areas was also developed.

While there is a degree of overlap between the content of the specialist standards and the nearest equivalent science standards, there are also differences that give teachers a range of options. Thus the development of these separate but related suites of achievement standards has generated a large number of potential combinations that could markedly change the nature of the subject "science" experienced in the different schools when courses are locally-redesigned. Other research in progress shows that some other schools have indeed moved to develop such courses, with courses in "physical sciences" that combine science, chemistry, and physics achievement standards as one example, (Hipkins and Neill, in press).

A small suite of Year 11 achievement standards in human biology was also added to those developed in science, chemistry, biology, and physics, based on the continuing popularity of this

© NZCER

subject with some groups of Year 11 students. Again, there is some overlap between the content of the biology/human biology standards but course options are widened.

To add even further to the possible permutations, horticulture and agriculture, both contextually-focused science subjects, also each have a suite of achievement standards. Further overlap and/or connections are possible with the technology curriculum in the areas of biotechnology and electronics, and with the geography curriculum in the area of the earth sciences. Potentially, environmental education courses could combine some earth science and/or biology standards with those from other curriculum areas including the social sciences and/or health and physical education.

While all the above refers to various achievement standards, there are also many science-related unit standards registered on the NQF. One suite of these was developed after the achievement standards for the explicit purpose of allowing NCEA credits to be gained from the alternate *Certificate in Science* course developed by the NZASE for Year 11 students for whom a traditional-discipline course is seen as unsuitable. Others predate the achievement standards, as in mathematics and English, and still others are related to the *New Zealand Certificate in Science*, which may also be offered as a polytechnic course.

The combinations that are actually put together in each *Learning Curves* school are currently somewhat conservative. However, they may well evolve over time. If they do, new mixes of standards will be influenced by a complex mix of political and social factors (Gaskell, 1992), including the purposes seen for learning science and the consequent manner in which the current curriculum is “read”. *See* Hipkins and Barker (2002) for an analysis of various possible readings of *Science in the New Zealand Curriculum*. As long as the education of future scientists is seen as a predominant purpose it seems likely that the historically privileged traditional-discipline courses will prevail, even though professional science is now typically carried out in cross-disciplinary teams (Hurd, 1997) that draw on a range of contextually-grounded inquiry methods. *See* Rudolph (2002) for a discussion of the historical evolution and potential consequences of the view that there is one essential method that constitutes rational science inquiry. Other influencing factors might include the desire to embrace (or reject) the more recently added earth science or astronomy topics (McGee et al., 2003), to develop science-focused environmental education courses, or to take advantage of employment opportunities in local industries.

Guide to selected science achievement standards

The various standards in use in the Year 11 traditional-discipline programmes in the 6 *Learning Curves* schools are summarised here so that it is possible to get a sense of the balance of topics/ modes of assessment in the courses offered in each school.

© NZCER

Level 1 science standards

There are 7 science achievement standards at Year 11, offering a total of 26 possible credits where the full suite is offered:

1.1 (I) Carry out a practical science investigation with direction (4 credits)

1.2 (I) Research, with direction, how science and technology are related (2 credits)

1.3 (E) Describe uses and effects of micro-organisms and the transfer of genetic information (5 credits)

1.4 (E) Describe properties and reactions of groups of related substances (5 credits)

1.5 (E) Describe rocks and minerals (3 credits)

1.6 (E) Demonstrate an understanding of physical systems (5 credits)

1.7 (E) Describe spatial relationships in astronomy and their effects on space exploration (2 credits)

Level 1 biology standards

In 2003, 3 of the 6 schools interchanged at least one of these *science* achievement standards with a selection from the suite of level 1 *biology* achievement standards. In 2 schools, those selected include 2 separate standards (1.3 and 1.8) that collectively specify standards for very similar learning to that specified by the science standard 1.3, for the same total of 5 credits:

1.1 (I) Carry out a practical biology investigation with direction (4 credits)

1.3 (E) Describe the transfer of genetic information (3 credits)

1.8 (E) Describe how humans use and are affected by micro-organisms (2 credits)

Guide to selected science unit standards

Three of the 6 schools also offered the opportunity for students in "academic" Year 11 science courses to be assessed via selected unit standards, in some cases replacing equivalent achievement standards and in other instances extending the course in areas perceived to be important for student learning. The standards in use for level 1 academic science courses in the 6 *Learning Curves* schools are summarised in Table 27.

© NZCER

Table 27 **Use of level 1 unit standards in Year 11 traditional-discipline science courses**

No of std.	No of credits	Level 1: titles of standards	School, year level, type of course					
			A	B	C	D	E	F
6329	3	Relate similarities and differences within the periodic table to atomic structure					✓	
6357	3	Identify and investigate common minerals and rocks and their uses	✓					
6369	3	Apply formulae and graphical methods to find unknowns for a physical system					✓	
8924	2	Describe the structure and replication of deoxyribonucleic acid (DNA)					✓	✓
18973	2	Demonstrate knowledge of patterns in matter						✓
18977	2	Demonstrate knowledge of the generation and use of electricity						✓
18989	2	Demonstrate knowledge of Earth and space	✓					

© NZCER

Year 11 traditional-discipline courses in science

With all this variety available it is interesting to compare the decision-making of the 6 science HODs with the course decisions made by their mathematics and English colleagues. Like their mathematics and English colleagues, these HODs have so far adopted a fairly conservative approach to the structuring of their Year 11 traditional-discipline courses in science. While there appears to be variability in these courses at level 1 in 2003, the analysis that follows shows that they actually covered a very similar range of content. Rather, it was balance of assessment modes chosen that varied in most cases. (Exceptions were the additional topics introduced in Town Schools E and F that were assessed by selected unit standards.)

Assessment of the contextual strands of SNZC

Table 28 shows that only 3 of the 7 level 1 science achievement standards were offered by all 6 schools in 2003. These included the internally assessed investigation standard (1.1) and 2 externally assessed standards that are seen to specify "core" content in physics and chemistry. Several HODs noted the importance of this content for students if they wish to keep pathways open for further study in either physics or chemistry at Year 12 and 13 and beyond.

Table 28 **Composition of the Year 11 traditional-discipline science course assessment**

	Science achievement standards offered							Other standards offered
School	**1.1**	**1.2**	**1.3**	**1.4**	**1.5**	**1.6**	**1.7**	
City School A 26 credits	✓	✓		✓		✓		2 unit standards Biology achievement standards 1.3 and 1.8
City School B 25 credits	✓	✓	✓	✓		✓		Biology achievement standard 1.1
City School C 24 credits	✓		✓	✓	✓	✓	✓	
Town School D 24 credits	✓		✓	✓	✓	✓	✓	
Town School E 34 credits	✓	✓	✓	✓	✓	✓	✓	3 unit standards
Town School F 27 credits	✓	✓		✓		✓		3 unit standards Biology achievement standards 1.3 and 1.8

N.B. Grey-shaded columns are internally assessed standards.

In our 2002 report we noted that several HODs were considering advantages for students in sitting 2 biology standards in place of one science standard. They argued that this gave 2 chances to achieve instead of just one, and that students who struggled would have more time available because the biology standards would be tested in a different 3-hour examination (Hipkins and Vaughan, 2002a). Two HODs opted for this strategy in the 2003 year, with one expressing the hope that the additional time would benefit the less able students and allow the school to improve its record of merit and excellence passes in the biological aspects of the course. However, one

© NZCER

HOD who tried this in 2002 had reverted to offering Science 1.3 in 2003 because he felt the strategy had not yielded the benefits anticipated. Biology was placed near the end of the 2002 examination timetable and some students simply opted not to attend, or did so for a bare minimum time before leaving. This HOD now thought that his students would be better off having their science learning assessed in one time slot. Another HOD analysed the 2002 pattern of national results for both options before deciding to stick with Science 1.3 so as not to confuse the students with an exam on 2 days for the same subject.

Just 3 of the 6 schools were offering achievement standards 1.5 and 1.7 (covering the less traditional earth sciences and astronomy) in 2003. However, all 6 schools did offer students learning opportunities in the topic areas addressed by these standards. For example, both were offered as optional extras for students in Town School F. Students could sit them if they were prepared to complete the additional work out of class time and, when interviewed early in the 2003 year, the HOD believed that some students would take up this challenge. About 30 of the "more motivated and able" students opted to be assessed in the earth science topics specified in AS1.5 in 2002 and they "did okay". In City School A students were to be assessed in these topics via equivalent unit standards. The HOD liked the fact that they are internally assessed so that, after one reassessment opportunity, they are "finished and out of the way". The HOF of City School B commented on what he saw as the narrow focus of the examination questions for science AS1.7 in 2002 but said he would still teach the topic "if there was time". He noted that earth science was the context in which he intended to set the students' research for AS1.2. A related research project (Hipkins and Neill, in press) has also found that achievement standards related to the Planet Earth strand of the curriculum are likely to be dropped from Year 11 courses.

Town School D also offered a Year 11 traditional-discipline course in biology as an alternative to the science course. Together with the 2 contextually-focused options (*see* below) this school offered students a choice of 4 Year 11 science options in 2003. However, none of the Year 11 students who completed the students' questionnaire were taking more than one of these science-related subjects in 2003.

Assessment of the integrating strands of SNZC

We noted in 2002 that some HODs were considering not offering the internally assessed research standard, AS1.2 (Hipkins and Vaughan, 2002a). Two schools were not offering the standard in 2003. One of these HODs was not happy with the students' achievement in 2002 and also noted that students were "doing research in just about every subject". This HOD saw the learning experiences as "less structured and formal" and believed that students "muck around in the library" when researching. The other HOD who had dropped this standard noted that it is "a lot of work for 2 credits", and that the learning is very resource intensive but the school has other more pressing priorities for new resources. However, this HOD saw the choice as less than ideal, noting that in some respects research is "one of the most important skills they'll get". By contrast one HOD expressed the view that the school had provided a better learning experience for his students in AS1.2 in 2003. He felt that his staff were clearer about expectations, had simplified and

© NZCER

streamlined directions to students, and had chosen a better context (biotechnology). While it was still challenging to achieve excellence in this standard, he reported that more students had done so that year than in 2002. Again, this standard was also likely to be dropped from schools in the *Shifting Balances* project (Hipkins and Neill, in press). In City School B, students were offered a second opportunity to gain credits for their science investigative skills. They attempted the science standard first, and later in the year were to be offered the equivalent biology standard. The HOF noted that the context used (agar plating of bacteria) is “something we would do anyway” and that this gave students who missed the standard the first time a second opportunity.

The balance of external and internally assessed credits

The internal/external assessment balance was different for the 2003 traditional-discipline courses offered in the 6 *Learning Curves* schools. City School C and Town School D offered less than 20 percent of the available credits via internally assessed course components and one of these HODs commented that the “kids can’t understand why there are so few internals in science”. By contrast City Schools A and B and Town School E offered 40 percent of the available credits via internal assessment. In Town School F the proportion rose to nearer 50 percent, reflecting the HODs expressed view that the internal/external credit balance is important because students find internal assessment easier.

Unit standards were also used to extend students in the “top” class in Town School E. This class was offered 54 potential credits with a focus on gaining as many of these as possible rather than “pushing for merit or excellence”. In the view of the HOD, more attention might be paid to gaining excellence in the 2003 examinations, now that the staff understood better what that could entail, but he thought the students would be more motivated by “the instant reward of many credits”. For this class, internally assessed credits made up 60 percent of the potentially available total.

An example of a Year 11 locally-redesigned course in science

In 2003 Town School E offered a Year 11 science option that combined unit standards from science with selected standards from beyond the traditional-disciplines. This course had a focus on ensuring that the students taking it would achieve the core generic unit standards for a level 1 National Certificate in Employment Skills (NCES). To this end the science option “contributed” a quarter of the year’s learning time to the teaching of interpersonal communication skills. The balance of the course was assessed by some of the unit standards designed for the NZASE course, and some health and safety standards, together with one measurement unit standard. In the main it was taken by a group of 60 students who were also studying equivalent courses in both English and mathematics. They were a group streamed off from the rest of their Year 11 cohort.

The overall content and focus of the course was different from the alternatives to traditional-discipline science offered in the other 5 schools, although in many respects it seemed to fit a niche more akin to the contextually-focused courses offered by them. The focus was practical and

© NZCER

related to contexts likely to be of use to students in the world of work beyond school. But the "redesign" component is clearly visible in the blurring of the boundaries of the traditional-disciplines that have historically constituted the subject called science.

Year 11 contextually-focused courses in science

All 6 schools offered at least one other option to Year 11 traditional-discipline science in 2003 and Town School E offered 2 (an "extension" to the traditional-discipline course for one class and a locally-redesigned course – *see* above).

City Schools A and B and Town Schools D and F continued to offer the NZASE Certificate in Science, as they did in 2002, and to assess this course with the suite of unit standards designed for this purpose. The one City School A class for this option was divided into 2 groups, ESOL students and those who have "less ability" in science. An ESOL teacher worked with the science teacher in this class.

Town Schools D and B both offered horticulture courses that combined science content with a practical focus on growing plants and on the potential for work in the horticulture industry.

City School C continued with its policy of offering science as an optional subject at Year 11. However, the 2003 students were offered the NZASE course for the first time and 10 students chose to take the course. The HOD noted that she had to "battle" to keep the course in the timetable (because of low numbers) and that Year 11 Biology was "sacrificed" to do so. She hoped that the popularity of the option would build, and that it would be possible to extend the course to Year 12 in 2004. She noted that, with 16 credits available for the 2003 contextually-focused course, and another potential 16 credits in 2004, students taking the full suite of unit standards over 2 years could achieve or be close to 24 level 1 science credits by the end of Year 12.

Year 12 courses in the science disciplines

In 2003 all 6 schools offered a full suite of Year 12 courses in the traditional sciences (biology, chemistry, physics). These were assessed by achievement standards in 5 of the schools but the Town School E HOD continued to favour unit standards unless the achievement standards could "offer something new". Full details of the composition of every possible Year 12 course were not sought because there is such a range. However, some common themes did emerge during the discussion of these courses and these are reported below.

Assessment choices in Year 12 traditional-discipline courses

While schools appeared to continue to include the relevant internally assessed achievement standard for investigation in each course (AS2.1 in the relevant discipline), they were less keen on the internally assessed research standard (AS2.2 in each discipline). One HOD noted that Biology

© NZCER

AS 2.9 (“Describe the impact of human activities on an ecosystem”) covers similar skills to this standard and is preferable because it can be combined with a field trip. However, this school is using the research standard (2.2) in chemistry and physics because the HOD believes that there would not be enough internally assessed credits available otherwise. The HOD reiterated the common perception that research skills are assessed in many other subjects, and was clearly only retaining the standard because so few others are internally assessed at Year 12. One HOD who decided to drop 2.2 in all the sciences nevertheless regretted the impact this decision had on the number of available credits for internally assessed course components. Another HOD noted that 2.2 looked “really busy” for 2 credits in physics so it had been dropped from the course. He made no comment about biology or chemistry.

There was only one mention of choosing to exclude an externally assessed standard from a traditional-discipline 2003 Year 12 course (although other examples may simply not have been mentioned). The HOD of City School C had waived assessment of plant form and function (AS 2.7) from Year 12 biology. In her view, students are not so interested in plants, although the topic has been retained in the overall course curriculum. She also noted that the school biology camp was not taking place in 2003 because “a lot of ecology is now in the external examination”. However, she also described a field trip that allowed the students to complete internally assessed investigative work for AS2.4 (Investigate an interrelationship or pattern in a population or community).

Year 12 locally-redesigned courses in the sciences

The HOD of City School A had hoped to introduce an alternative science course at Year 12 in 2003. A survey of the 2002 Year 11 students who were taking a contextually-focused science option had demonstrated a demand for such a course. The HOD noted that some of the students who struggled with the traditional-discipline Year 11 science course would also have preferred to move to another type of option at Year 12. The structure anticipated for the course was as shown in Table 29.

© NZCER

Table 29 **Proposed alternative Year 12 science course for City School A**

Topic and area	Assessment (all level 1)
Human biology – describe functioning of human circulatory, respiratory, excretory systems	H Bio AS 1.6 (E) 6 credits
Human biology – describe the functioning of the human reproductive system	H Bio AS 1.7 (E) 3 credits
Chemistry – relate similarities and differences within the periodic table to atomic structure	US 6329 (I) 3 credits
Biology/biotechnology – demonstrate knowledge of biotechnology	US 18978 (I) 2 credits
Horticulture – demonstrate knowledge of plants and plant production	US 18984 (I) 2 credits
Physics – demonstrate basic knowledge of waves	US 18980 (I) 2 credits
Chemistry – investigate the characteristic behaviour of acids and bases	US 8936 (I) 3 credits

The structure of this course demonstrates the potential to create interesting new mixes of achievement and unit standards that cross the boundaries of the traditional-disciplines of biology, chemistry, and physics. In Bernstein’s terms this course is weakly classified. The topics chosen could lend themselves to strong or weak framing, depending on how closely the various topics adhere to traditional “content delivery” in each area, or how much integration can be achieved between them in the actual teaching of the course. However, for 2003, the proposal was turned down by the school’s curriculum committee, on the grounds that it would create staffing difficulties. Some of the students who might have taken this course opted to study Year 12 biology instead. The HOD hoped the decision would be reversed for 2004.

Town School D did offer a Year 12 science course, assessed by a more traditional mix of level 2 science achievement standards. This was a small class, with just 9 students having chosen this option in 2003. Town School E had hoped to also introduce a Year 12 science course but there were insufficient takers.

Contextually-focused Year 12 science courses

In 2003, City School B offered an agriculture/horticulture course. Town School D offered Year 12 horticulture but the HOD was worried because this subject had fallen victim to a drop in student numbers at Year 13, with the consequence that the Year 12 students have probably lost this subject pathway for their final school year. The HOD was worried that this would have a flow-on effect, with fewer students choosing the course at Year 12 in 2004 so that it too might become vulnerable to cancellation. He foresaw similar issues for chemistry and physics in the future because students perceive these as being “too hard”.

Town School E offered Year 12 courses that prepared students for a range of national certificates. These include agriculture, electronics (NCET – National Certificate in Electro-Technology), forestry (NCF), and for the first time in 2003, aquaculture (NCAQ). The HOD noted that students

© NZCER

could complete the electronics qualification at school and save half a year of further study in both forestry and aquaculture courses.

Other issues for meeting students' learning needs

During our 2003 conversations, HODs raised issues related to course design and delivery that have broader implications across all 3 curriculum areas. Several of these are discussed next.

Basic literacy

Four science HODs expressed concerns about the level of reading and writing skills students need for the new external qualifications. One HOD noted that students taking the school's contextually-focused option are capable of "high level conversations" about their learning but have problems with their basic reading literacy which leads to learning and motivation issues. He is considering further differentiation of the Year 11 science courses for 2004. Another HOD also mentioned that literacy issues were a factor in non-achievement of some students in science, particularly Pasifika students. Yet another HOD expressed concerns about the level of writing skills required for the "paragraph type questions" in the examinations for the externally assessed achievement standards. A fourth HOD suggested that a lot of students were so "put off" by the level of writing required in the new style questions in the 2002 science examination that they did not write anything at all in some cases and simply left the examination room. This HOD felt the science staff "almost need the English department to teach the students how to answer science questions". Similar concerns were reported in the *Shifting Balances* research, for both science and mathematics (Hipkins and Neill, in press). The manner in which the HODs continue to respond to this perceived learning challenge for some of their students is a factor we will continue to track in the 2004 data collection round.

Keeping pathways open

Students may not be able to take a traditional-discipline mathematics course at Year 12 if they have not chosen and achieved in certain key areas of mathematics at Year 11. The prerequisites for 4 of the schools are shown in Table 30.

Table 30 **Prerequisites for entry into Year 12 traditional-discipline mathematics courses**

School	L1 mathematics credits (min)	Other prerequisites	Exceptions
City School A	10		
City School B	14	Merit in one algebra AS	
Town School E	18	3 unit standards – algebra, trigonometry and figures	
Town School F	15	Algebra restriction considered but not enforced	

© NZCER

Similar restrictions apply in science where the HODs also reported using the achievement data from Year 11 to control entry into Year 12 traditional-discipline courses. The prerequisites specified in each school are shown in Table 31.

Table 31 **Prerequisites for entry into Year 12 science traditional-discipline courses**

School	L1 science credits (min)	Other prerequisites	Exceptions
City School A	8 – 10	Literacy and numeracy credits	Standards relaxed for some biology students
City School B	9	AS1.1 and external standard relevant to discipline taken One algebra standard for physics	Ag./Hort. – any science credits acceptable
City School C	Negotiable	Achievement in external standard relevant to discipline taken	
Town School D	Minimum applied – no. not specified	Achievement in science external standard relevant to discipline taken "Competency" in mathematics	Year 11 minimum biology credits instead of science credits
Town School E	20	Achievement in science external standard relevant to discipline taken at merit or better (bio, chem, phys) 18 mathematics credits for physics	Year 12 science and aquatic science do not require specific AS passes
Town School F	Negotiable	Achievement in internal standards taken into account*	

* The HOD was disappointed with the students' achievement in the externally assessed standards and felt they were not a fair reflection of the students' actual achievement.

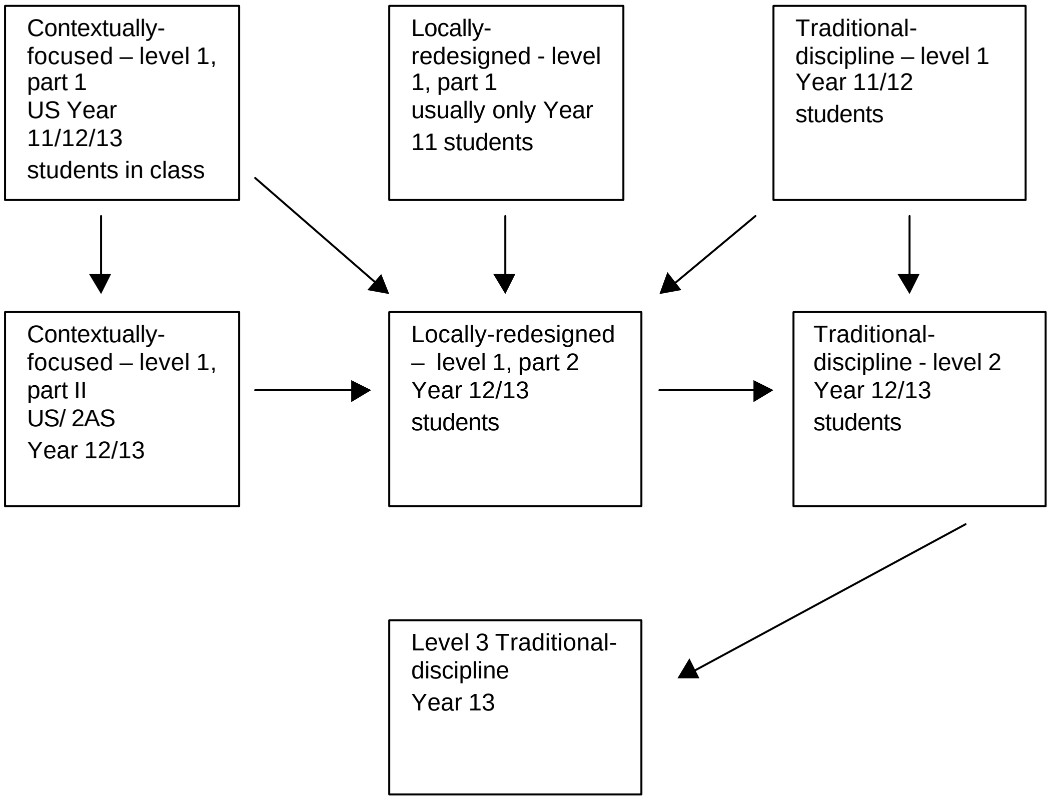
Town School E applied the most rigorous prerequisites, with more than double the number of level 1 credits specified than were required in the other 5 schools. Science is very strong in this school, with more courses at Year 12 level than in any of the other 5 schools. There was more flexibility in the other 5 schools, although one of these HODs described Year 11 as "a bit of a drafting yard" where a weak achievement record would rule out further traditional-discipline science study for many students.

This comment echoes Bernstein's analysis of the power issues that underlie the tradition of strong classification and framing of educational knowledge (Bernstein, 1971). Such courses have, up until now, reinforced schools as the sites where entry into privileged traditional knowledge fields was patrolled and restricted. With the introduction of new types of NCEA courses, the possibility exists that this situation could be subverted. For example, it is now possible for mathematics students in one *Learning Curves* school to take a longer course route to reach the same level of achievement that high-achieving students reach more quickly. This is illustrated in Diagram 1 below.

Pre-requisites emphasise the importance of helping students to make appropriate subject choices at every year level in the senior secondary school. The HOD of City School A illustrated this vividly with a flow chart that shows the multiple possible pathways through senior mathematics in her school.

© NZCER

Diagram 1 **Multiple possible pathways through the mathematics courses in one school**



The HOD of City School A referred to this diagram when speaking of her hope to "educate" parents to see the locally-redesigned Year 11 course (the 2-year course) as a better learning pathway for some students. She pointed out that students who take this course can still study a level 2 traditional-discipline mathematics course in Year 13, so they "still have a mathematics pathway open". This HOD says that course selection "is all about strategy now" and she sees a need for a full time careers adviser to help students negotiate their way through the available options.

Evidence that within-subject options have led to learning success

The mathematics, science, and English HODs seem well pleased that the NCEA initiative is working for students who would otherwise struggle with their learning in these subjects. Several described patterns of student success to support this view and these are described next. Some HODs were more ambivalent about the learning success of their most able students – more so for mathematics than for English or science. Comments of this nature are also reported below.

Success for those with specific learning needs

City School A is very pleased with the achievement demonstrated by the students from the one class that took the first year of the 2-year level 1 locally-redesigned mathematics course in 2002. According to the HOD the students' achievement in 2002 was "phenomenal" and also "it was the

© NZCER

[results from] the externals that blew us away". Some students achieved merit or excellence passes for the achievement standards that they sat, whereas their overall class average for Year 10 mathematics had been 30 percent. Some of this class achieved all 17 credits offered and in doing so demonstrated greater learning success than some students in the traditional-discipline course. The HOD believed that this success had "changed their self concept" as mathematics learners and most of them were carrying on with the second year of the course.[21] Despite losing some students to a timetable clash, numbers in the class had swollen for 2003 – the second year of the course. Some students who only achieved 10 level 1 credits from the traditional-discipline Year 11 course in 2002 requested a transfer to the locally-redesigned course rather than carrying on to Year 12. Some Year 13 students had opted in after failing their School Certificate mathematics examination 2 years before. Some students who did the lowest level of the Year 11 mathematics course in 2002 had improved to the point where they could move up to a new level of challenge, especially some ESOL students. While some of these students were experiencing "minor overlaps" with their previous mathematics study, the HOD said that "they actually love that. They enjoy having already passed something that no-one else in the class has done."

In view of these successes the HOD was hoping that City School A would be able to begin 2 full classes of Year 11 students on the 2-year mathematics pathway in 2004. She worried about those students who chose not to go on with their mathematics learning after having only achieved limited success from the 1-year course in 2002.

Similarly, the HOD of another school noted that students who took the locally-redesigned level 1 mathematics course last year "did very well", with 2 moving up to the traditional-discipline Year 12 course in 2003. The HOD also noted that some students achieved better results from the locally-redesigned course than others who struggled with the traditional-discipline course. Because it was realised that this was likely to be the case well before the external examination time, the school introduced 2 additional unit standards to the traditional-discipline course late in the 2002 year. This was done to give these struggling students an opportunity to gain the 8 numeracy credits required to achieve a Level One Certificate. The HOD believed that this would help to "take the pressure off" and assist them in better demonstrating their learning during the end-of-year external examinations.

Yet another mathematics HOD reported being "pretty positive" about the NCEA because a number of Year 11 students who did locally-redesigned courses in mathematics and in English in 2002 had gained the full 80 credits needed for the award of their level 1 NCEA certificate. In the view of this HOD, these students would have failed in the School Certificate system and the NCEA had "given them a chance".

[21] Some of these students experienced an unsolvable timetable clash with their 2003 Year 12 music course, but might have been able to resume their mathematics learning in 2004. *See* the first *Learning Curves* report (Hipkins and Vaughan, 2002a) for a full discussion of timetabling dilemmas in the 6 schools.

© NZCER

One English HOD reported on the success of a class of Year 12 students who studied a level 1 traditional-discipline course last year, working in different contexts from their previous year but effectively repeating the learning of the same skills. She said that these students “did really well”, achieving a number of both internally and externally assessed achievement standards. She noted that the students “tend to be boys with ego issues” and that this pattern of achievement goes against the historical trend in repeat School Certificate classes, where students often did worse in the repeat year than they had in the first year. The success of some refugee students in the same school, when demonstrating their ability to make a speech, has already been noted.

In one school the HOD reported that 14 of the 15 students in the contextually-focused Year 11 English class had already gained 5 level 1 credits by the end of term one 2003. This contrasted with the previous year where “most didn’t get 5 [credits] all year”. This HOD saw the students as now having a “credit mentality” that had changed their perceptions of their ability to succeed. Another English HOD noted that their 2002 contextually-focused course at level 1 had “worked really well last year”. Some students achieved the externally assessed standards and the percentage of unit standard passes was “really high” compared with historical patterns of success for these types of students. However, this HOD wondered if some of these students had “reached their ceiling” [of achievement].

Success for the “top” students

Some HODs were more ambivalent about the NCEA initiative when discussing the learning success of their high-achieving students. Two HODs worried that more talented students are not being given opportunities to see the subject of mathematics as a whole, given the compartmentalisation that is reinforced by the separate assessment of each topic. Both specifically mentioned the separation of graphing and calculus. One of them said: “I thought it [compartmentalisation] would stifle creativity and it has.” The other expressed the concern that achieving excellence often involved *writing* about mathematics rather than “getting their teeth into higher level mathematics”.[22] One HOD expressed ambivalence about the holistic marking methods required for making achieve/merit/excellence distinctions (*within* each achievement standard used for course assessment). This type of marking “goes against the grain of the way we mark in mathematics”. In the opinion of this HOD, answers “need to be right because they would need to be in the real world and small mistakes are not acceptable”.

A different perspective on the learning of the more able students was provided by the mathematics HOD who noted that his school had lifted its expectations considerably, especially in topic areas such as probability, where the Year 11 students did not achieve as well as the school had expected. This HOD said that the 2002 external assessments had given clear information about students’ strengths and weaknesses, and that to achieve excellence students now had to perform at

[22] There is an interesting tension in the juxtaposition of these twin concerns, in that some mathematics educators assert that narrative discussion about mathematics helps students to see relationships and wholes. *See* for example, Boaler and Greeno (2000).

© NZCER

a higher level than previously. The school had adjusted its 2003 Year 9 and 10 courses to help students rise to the new challenges.

One English HOD expressed the view that the full 24-credit traditional-discipline course was more challenging than the previous course. She said it was “certainly not dumbing down” and that student achievement levels at Year 11 had been raised accordingly. Another noted that students now needed to develop a wider range of skills, and that their reading was being developed in a wider range of contexts than previously.

© NZCER

Section Eight

Technology: new pathways for students

Introduction

This section outlines the nature of courses offered in the comparatively new curriculum area of technology and some of the specific challenges for student subject choice. Technology is the curriculum area with subjects and courses most closely tied to industry-recognised skills and qualifications and tertiary level study (usually in polytechnics) for industry-recognised skills and qualifications. There is enormous potential to create distinct pathways to meet student needs. The 7 different learning areas within the technology curriculum have potential overlap with science, especially in biotechnology and electronics. The section also discusses the nature of technology in relation to its previous form as the technical subjects of woodwork, metalwork, cooking, sewing, and technical drawing, as well as the schools' attempts to meet learning needs for 2 different groups of students, some of whom are judged by teachers to be better suited to technical, rather than technology, subjects.

Key findings

All 6 *Learning Curves* schools offer technology courses which use the technology achievement standards as well as courses which use the graphics achievement standards. However, most schools also offer technology courses which use unit standards and lead to other National certificates, rather than the NCEA. In these cases, technology serves as a contextually-focused pathway through school, more akin to trades training. One of the schools has designed their courses in this way in order to avoid the technology curriculum and technology achievement standards, which are used in traditional-discipline technology courses.

The technology courses in the 6 schools still make some use of what has traditionally been a transition (to work) focus for technical subjects, particularly through their unit standards-focused courses. However, the technology curriculum and achievement standards now extend and develop the intellectual aspects within these courses, described by one HOF as a shift from a teacher-driven, prescriptive, and instructional approach to a teacher-facilitated, enquiry-focused, problem-solving approach.

© NZCER

This shift appears to be promoting an increased status for technology subjects (in particular the traditional-discipline technology courses) and an increased ability to attract academically successful students. However, the shift in status, content, and skills does not yet seem to be matched by a shift in some parents' and teachers' understandings about what technology (as a school subject area) now is or how best to use its potential.

Technology and transition beyond school

Perhaps more than any other curriculum area in the *Learning Curves* project, technology seems to be particularly fraught with regard to the relationship between subject content and the world of employment beyond school. The technology HODs at each of our 6 case study schools referred to the challenge of rethinking their subject in terms of the transition to further (tertiary level) study or training and employment. The old craft and workshop subjects which have come under the technology curriculum umbrella – sewing, cooking, woodwork, metalwork, and technical drawing (now with separate graphics achievement standards) – have always had a close relationship with the concept of "transition" beyond school. Those subjects were generally the lowest in the traditional subject hierarchy of the school. Traditional academic subjects like history, mathematics, English, sciences, and languages occupied the high-status positions. The craft and technical subjects were taken up by students who did not achieve academically and "transition", in the former pejorative sense of the word, indicated those students who would become "early school leavers" and not go on to tertiary education (*see* Higgins, 2002).

The current term, "pathways", supersedes the "transition" concept of subjects for the "failures", by broadening the scope of initiatives linking school and transition beyond school. Now all students – academic achievers and technical-vocational achievers – may be considered for engagement on appropriate pathways (Vaughan and Boyd, in press). The Government's aim is to have "all 15–19 year olds engaged in appropriate education, training, work, or other activities leading to long-term economic independence and well being by 2007" (New Zealand Treasury, 2003). This shift in thinking about transition and pathways highlights the change for technology subjects. These subjects are now, theoretically at least, on a status par with the more traditional academically-recognised subjects in 2 ways. First, the NCEA-assessable content of the technology curriculum has an emphasis on cognitive (academic) over practical skills. Second, the status of high achievement in technology subjects has risen through greater recognition of polytechnics, industry training, and the re-invigoration of apprenticeships.

Technology is a subject area where our course descriptors – *traditional-discipline*, *locally-redesigned*, and *contextually-focused* – are particularly useful. The persistently problematic framework of talking about the academic versus the vocational, in the climate of a qualification which allows the mixing and matching of each within traditionally academic or traditionally vocational subjects, is brought into sharp relief in an inquiry into the subject of technology. How will students, parents, and teachers (of technology and/or other subjects) respond and make use of

© NZCER

the standards? What kinds of pathways can be carved out for students in technology's name? These are precisely the sorts of issues the HODs in our case study schools are grappling with now, in their second year of implementing the NCEA with the new technology curriculum.

The range of technology standards and subject areas

The Technology curriculum has been described as an ambitious and radical new approach involving a complex structure which, when combined with a lack of staff experience, may be difficult to implement (Australian Council for Educational Research, 2002). *Technology in the New Zealand Curriculum* outlines 7 areas of learning, designed to serve as conduits for generalised aspects of technological learning. They are:

- biotechnology;
- electronics and control technology;
- food technology;
- information and communication technology;
- material technology;
- production and process technology; and
- structures and mechanisms technology.

These areas of learning may be formed into Year 11 subjects that are assessed by a selection from the 7 available level 1 technology achievement standards, with a total of 36 possible credits on offer. In Town School E, electronics is included under the science curriculum umbrella rather than the technology area. Biotechnology is another area of potential overlap with the science curriculum.

The following is a summary of the technology achievement standards offered at level 1 of the NCEA. Standards followed by an (E) are externally assessed in a national examination. Standards followed by an (I) are assessed within the school. Comparative credit values are indicative of relative lengths of time afforded to different topics within the school year. Students are limited to achieving each standard within *one* area of learning. A student taking both food technology and fabric technology may not, for example, gain achievement standard 1.1 in both, even though the materials used are different in each.

© NZCER

Level 1 achievement standards in technology

Table 32 **Level 1 achievement standards in technology**

1.1 (I)	Use a plan of action to develop a technological solution to address a given brief (6 credits)
1.2 (I)	Formulate a brief to address a given issue (6 credits)
1.3 (I)	Develop a technological solution by widening the use of an existing technology (6 credit
1.4 (I)	Develop a conceptual product design and outline means for its ongoing production (6 credits)
1.5 (E)	Demonstrate understanding of technological knowledge (4 credits)
1.6 (E)	Present a technological solution that addresses the requirements of a brief (4 credits)
1.7 (E)	Describe the interactions between a technological innovation and society (4 credits)

Level 1 achievement standards in graphics

Although it also has links with the visual arts, many schools place graphics under the umbrella of the technology curriculum area. In Section Seven we noted that suites of achievement standards have been developed for the 3 traditional science disciplines, even though assessment of these subjects could potentially have been carried out by use of the science achievement standards, at least in *traditional-discipline-focused* science courses at level 1 of the NCEA. Doubtless for similar reasons, a separate suite of achievement standards has been developed for graphics, reflecting its historical integrity as a distinct school subject, despite the emphasis within the overall technology curriculum on the importance of drawing, graphics, and design processes.

Table 33 **Level 1 achievement standards in graphics**

1.1 (E)	Produce freehand sketches that show design features (3 credits)
1.2 (E)	Produce and use geometrical shapes and solids (3 credits)
1.3 (E)	Produce instrumental working drawings (3 credits)
1.4 (E)	Produce pictorial drawings using instruments and render these drawings (3 credits)
1.5 (I)	Produce a mock-up and mode (3 credits)
1.6 (I)	Apply a design process and design principles to identified needs and opportunities (3 credits)
1.7 (I)	Evaluate design features, decisions, and solutions (3 credits)
1.8 (I)	Present design ideas that show design features and functions (3 credits)

Other level 1 standards

Students studying food options that have a home economics focus are likely to be assessed using a mixture of unit standards and achievement standards. Again, a suite of subject-specific achievement standards has been prepared, based on aspects of *Health and Physical Education in the New Zealand Curriculum*. These have a quite different flavour to those used for food technology:

1.1 (I) Plan and prepare food to meet the nutritional needs of children (4 credits)

1.2 (I) Plan and prepare food to meet nutritional needs during adolescence (5 credits)

1.3 (I) Explore cultural influences on food choices and eating patterns (4 credits)

1.4 (I) Demonstrate and apply safe food-handling practices and strategies (2 credits)

© NZCER

1.5 (E) Analyse nutritional information and the effects of advertising on food choices (5 credits)

1.6 (E) Describe the impact of societal influences and community initiatives on hauora (4 credits)

Similarly, information management (IM/TIM) is a subject for which a specific suite of achievement standards has been developed:

1.1 (I) Enter text from provided material and by direct entry composition (2 credits)

1.2 (I) Use standard operating and file management procedures (2 credits)

1.3 (I) Access and process information from different media (4 credits)

1.4 (I) Apply a decision-making model to produce a solution from a given brief (4 credits)

1.5 (E) Communicate information from given materials and by direct composition (3 credits)

1.6 (E) Manage information using spreadsheet, text, and draw/paint applications (4 credits)

1.7 (E) Apply design principles to produce documents (5 credits)

The use of unit standards in technology courses

Between them, the 6 schools use a wide range of unit standards to assess selected aspects of their technology subjects. Some schools have combined selected unit and achievement standards to assess courses for NCEA credits – for example, Town School D's Year 11 Hard Materials/Production/Process course. Alternatively, unit standards may be the sole means of assessing technology courses for the NCEA award, as with City School B's Year 11 Digital Media course.

Many of the 6 schools' technology courses also use unit standards to assess learning for the award of a national certificate in a particular industry area. Town School E's HOD pointed out that because industry does not recognise achievement standards, they cannot be credited from the NCEA to a national certificate award in another area. In contrast, unit standards may be credited from a national certificate to the NCEA, making them more flexible for building multiple qualifications. The national certificates are clearly a popular means of credentialling learning in technology subjects, with some or all of the following offered in each of the 6 case study schools:

- National Certificate in Materials Technology – Applied Design (Year 11)
- National Certificate in Materials Technology – Product, Production & Promotion (Year 11)
- National Certificate in Food Technology (Year 11)
- National Certificate in Food and Nutrition (Year 11)
- National Certificate in Furniture Making (Year 11)
- National Certificate in General Construction (Year 11)
- National Certificate in Engineering (Year 11)
- National Certificate in Electronics Technology (Year 12)

© NZCER

- National Certificate in Design (Graphics) (Year 11, Year 12)

Further, some courses act as entry level to tertiary level study in a particular area or industry. In these cases, students may gain credits as part of one or more of the national certificates that they will go on to complete at a tertiary institution or through industry training whilst in employment or as part of an apprenticeship. For example, City School B has an automotive trade course which offers entry level credits towards a National Certificate of Automotive Trade. And Town School E offers entry level credits to polytechnic courses in engineering and furniture making.

© NZCER

Table 34 **Year 11 technology subjects by school (US = unit standards, and AS = achievement standards are main assessment method, NC = national certificate other than NCEA)**

	City School A **5 options**	**City School B** **11 options**	**City School C** **5 options**	**Town School D** **5 options**	**Town School E** **4 options**	**Town School F** **7 options**
ICT	Information management (AS) Graphics & design (AS)	Information Management (US) Digital media (US) Practical computing (US) Computer studies (International qual) Graphic design (US/NC design)	Text info management (AS) Text info management (US)	Text info management (AS)	Graphics (AS)	Information Management (AS) Graphics (AS)
Workshop technology	Workshop technology (AS)	Workshop design (AS) Practical woodwork (US) Automotive training (US/NC automotive trade)	Design tech wood/metal (AS)	Structures & mechanisms/ electronics/information (AS) Hard Material/Production /Process (AS)	Design technology – wood (US/ NC Furniture Making; NC Construction) Design technology – metal (US/ NC General Engineering)	Materials Technology – wood (AS) Materials Technology – metal (AS)
Fabric	Fabrics & design (AS)	Technology fabric design (AS)	Design tech textiles (AS)	Biotechnology / Food / Soft Materials (US/ NC Material Tech – Applied Design; NC Materials Tech – Product, Production & Promotion; NC Food Tech; NC Food & Nutrition)		Materials Technology – Fabric (AS)
Food & biotech.	Food & nutrition (AS)	Practical food & nutrition (US) Food & nutrition technology (AS)	Food & nutrition (AS)	Food & nutrition (AS)	Food technology (US)	Food & Nutrition (AS) Cooking and Food Preparation (US)

© NZCER

Table 35 **Year 12 technology subjects by school (US =unit standards, and AS = achievement standards are main assessment method, NC = national certificate other than NCEA, and ICDL = International Computing Driving License)**

	City School A 6 options (from 5)	City School B 14 options (from 11)	City School C 7 options (from 5)	Town School D 7 options (from 4)	Town School E 6 options (from 4)	Town School F 6 options (from 7)
ICT	Computer studies (US) Vocational computers (US) Graphics and Design (AS)	Computer programming (US/ICDL) Computer studies (US/ICDL) Practical computing (US) Graphic design (US/NC) Information management (AS) Digital media (US)	Graphics (AS) Text and info management (AS)	Graphics (AS) Text and info management (AS) Computing (US)	Graphics (AS)	Graphics (AS) Computer studies (US) Information management (AS)
Workshop & hard materials	Workshop technology (AS)	Automotive (US/NC) Design workshop (AS) Electronics (US) Carpentry (US) Practical woodwork (US)	Design technology (AS) Engineering (US)	Technology – hard materials / production / processes (AS)	Design tech – metal (AS) Design tech – wood (AS) Furniture making (US/NC) Engineering (US/NC)	Industrial pathways(US) Design tech – wood and metal (AS)
Fabric	Fabrics and design (AS)	Design tech fabrics	Design tech textiles (AS)	Technology – food & fabric (AS)		Fabric tech & design (AS)
Food & biotech.	Food and nutrition (AS)	Food and nutrition (AS) Hospitality (US)	Food and nutrition (AS) Hospitality (US)	Food and nutrition (US/NC) Chef training (US)	Hospitality and catering (City and Guilds Qual.)	

© NZCER

The structure of Year 11 courses in technology

Town Schools D and E emphasise contextually-focused courses leading to industry-related qualifications. Although Town School E offers the fewest options, it seems to be the most familiar with the range of National Certificates and the possibilities these provide for creating alternate pathways through school. Town School D, which is a Gateway school, similarly uses unit standards for assessment to offer a range of national certificates through its contextually-focused courses. Town School E has long worked with unit standards in the pre-NCEA days, so it is perhaps unsurprising that this year the technology HOD reported to us that the school largely avoids the technology curriculum by not using its achievement standards. In 2002 the school did enter students for these standards but their overall achievement was so low that this was scrapped for 2003. Now the school only uses the achievement standards to assess graphics, preferring to offer courses leading towards other industry-related national certificates that are seen to better meet the needs of students. Graphics is seen as the exception because, as the HOD explained, it meets the needs of 2 groups of students. The small number of less academic students who take the course are able to express themselves through a practical medium (drawing). The more academically-inclined students, who are the majority in the course, appreciate the intellectual challenges of producing working drawings and designs (rather than creating 3-dimensional objects as in other technology subjects).

City Schools A and C mainly use achievement standards to assess their technology courses, with the exception of computer studies courses. Unlike the other schools, City School A does not offer full unit standards-focused “alternatives” to the technology courses at Year 11 and at Year 12, but does offer the contextually-focused course “Vocational Computers”. The ghosts of the old “craft” subjects are evident in Year 11 subjects that appear to be a repackaging of sewing, cooking, metalwork, and woodwork. Some have corresponding technology names: fabric technology; food technology; design workshop (metal); and design workshop (wood). They variously fit our traditional-discipline and contextually-focused descriptors. Some food-focused courses are called home economics or food and nutrition and are assessed with non-technology achievement and unit standards (*see* above). Some HODs noted that the contextually-focused industry-specific courses meet the needs of some students for subjects that allow them to “do” rather than repeat the exercise of “sitting through” other subjects like English and mathematics.

Year 12 courses in technology: industry standards and qualifications

A wide range of specialised technology subjects and national certificates is available at Year 12 level. The total of 38 technology options at Year 11 expands to 46 options at Year 12. Several schools offer non-NCEA technology courses designed to run over several years. City School B offers computer studies courses at Years 11, 12, and 13 that are designed as specific pathways for students. These courses are not assessed against achievement standards or unit standards. Instead,

 © NZCER

they are fully internally assessed for internationally recognised IT qualifications such as the International Computer Driving License (ICDL) and they are designed to provide entry into university courses in computer science or straight into employment in computer programming. Town School E uses City and Guilds qualifications as well as national certificates.

Town School F plans to introduce 2 new locally-redesigned Year 12 subjects for 2004 – “craft and technology” and “industrial pathways” – both for “trade-minded” students (usually boys) who have already done Year 11 design technology and don’t want to repeat it at Year 12 or Year 13. These will provide a pathway to further industry-specific education with a certain amount of focus dedicated to numeracy and literacy.

Entry into Year 12 courses

Two HODs raised the issue of students being restricted to gaining credits for AS1.1 in only one technological area at level 1, even though using “a plan of action to develop a technological solution to address a given brief” (AS1.1) is different for distinct areas of technology. The HODs said that this created entry level difficulties at level 2 where there are more, and more specific, technological areas from which to choose. For example, if a student has achieved sufficient technology credits at level 1 for, say, food technology, they are in theory entitled to enter level 2 engineering, even though this is not feasible from a teaching and content/skills point of view. One of the HODs thought there should be restrictions on Year 12 course entry, with students required to pass a minimum number of technology standards at level 1 in order to enter level 2. Her school decided students should get 2 out of the 4 standards they attempted in order to gain entry to a Year 12 technology course. However, this by itself does not overcome the difficulty created by the restriction on gaining standard 1.1 in more than one technological area.

Schools can offer a general course that mixes technological areas at Year 11 but one HOD worried that this might turn students off technology altogether – even though there may well be good Year 12 technology options that would suit them. The other HOD explained that some students at her school who have taken a Year 11 (level 1) materials/structures general course have then wanted to do electronics at Year 12 (level 2). This called into question how much the level 1 curriculum could provide them with the practical skills needed for such a pathway.

Meeting student learning needs in technology

We now report on issues discussed by the technology HODs and the decisions they have made when designing technology courses they consider capable of meeting the needs of the wide range of students who choose them.

 © NZCER

Intellectual or practical?

In 2002 we reported that technology HODs found the new emphasis on research and planning came at the expense of more practical, "hands on" skills or "craftsmanship" development, thereby disadvantaging students who "learn by doing" rather than problem-solving through an action plan (Hipkins and Vaughan, 2002a). We noted that this has been called the "intellectualisation" of the subject. Media articles have highlighted a number of schools' claims that the technology curriculum is too academic and not appropriate for many practically-oriented students (Chamberlain, 2003; *The New Zealand Herald*, 2002). In response, schools are starting to use the opportunities afforded by the National Qualifications Framework to repackage or locally-redesign their technology courses, aligning them with Industry Training Organisation standards and Modern Apprenticeships (*New Zealand Education Gazette*, 2003).

Each of the 2003 interviews with HODs yielded similar, perhaps more firmly established, concerns over the structure and content of the technology courses with regard to the achievement standards. City School C's HOD felt that, at Year 11 level in particular, academic skills are seen as so important that practical skills are undervalued – yet these are the very skills that students most want to develop and feel they can succeed in learning. In his view, the new emphasis on academic skills in technology has made it difficult to anticipate which students will do well or in which aspects of the course they will achieve, and therefore how and where to pitch the lessons. He believed that in 2002 this disjuncture continued through to the external assessments, where he found some of the judgments hard to understand when compared with his knowledge of the students: some of the most "mediocre" students (in terms of their work) seemed to do better overall than others he would have rated more highly.

City School C's HOD described the achievement standards assessed technology approach as being *project*-focused. Students work through a planning booklet (achievement standards 1.1 and 1.2) and then "get on and make whatever they are doing". The entire subsequent process covers the demonstration of technical knowledge and development of a solution (achievement standards 1.5 and 1.6). However, whether or not the student ends up with a *well-made* product is not actually assessed. Hence City School C's HOD claimed that it is in fact possible to pass level 1 technology and not actually make anything.

City School B's HOF also described technology as intellectually demanding. He explained that because students now have to consider outside stakeholders, there is a people-products relationship built into the curriculum that is new or at least new in the way it has been made explicit. The crux of the matter is that the kinaesthetic approach to problem-solving has been diminished in favour of a more intellectual approach. What he describes as "tinkering" has always been a means of problem-solving but this process has been formalised in such a way as to be quite challenging for many students who just want to "make things".

 © NZCER

Responses and course changes

Although the concerns of the HODs in 2003 are much the same as in 2002, varied responses to these concerns have developed since then. Technology HODs have begun implementing new courses and strategies, mixing achievement and unit standards, and linking more explicitly to pathways beyond school, to better meet the needs of their students.

The range of Years 11 and 12 technology subjects summarised in Tables 34 and 35 highlights the high number of unit standards-focused courses offered by the 6 schools. These are a popular solution to concern that the technology curriculum has become too intellectually challenging for many of the students who previously would have achieved well at school nowhere else *but* in the technology subjects. Several schools cited in the media articles mentioned above are working with polytechnics and Industry Training Organisations (ITOs) to develop pre-trade apprenticeship training courses at school. Several of our case study schools have followed a similar path, offering courses that are clearly aligned to further training in particular industry areas.

Town School E, for example, which takes the position that NCEA is but *one of many* national Certificates available, prefers to pursue other national certificates in the technology area, rather than follow the achievement standards-focused technology curriculum for NCEA. In 2002, the school attempted to marry achievement standards and unit standards in a number of their technology courses but they dropped this practice in 2003. The HOD claimed the achievement and unit standards mix was simply not an appropriate solution for students wishing to pursue careers in trades. Students at this school now work towards industry-recognised qualifications instead.

City School B offers the highest number of technology courses overall, many of them unit standards-focused. The school has more students in the unit standards-focused courses (electronics, hospitality, food technology – the latter uses the home economics syllabus and not the technology curriculum) than in NCEA courses (design technology, fabrics). Section Twelve reports on the most popular subjects across the 6 schools. We note here that the "Home Economics" approach to food is much more popular than the approach based on the technology curriculum.

Unlike City School B and Town School E, City School C is not switching to, or adding, unit standards courses to its complement of technology subjects, preferring instead to adjust the achievement standards within its existing courses. For example, achievement standard 1.7 (interactions between a technological innovation and society) was attempted by very few students at this school in 2002. The HOD thought this was because they didn't see the link to the practical aspects of the course. This year the HOD plans to use that negative experience to better embed the standard in what the students do in class throughout the year.

City School C intends to add another Year 11 "hard materials" technology course to the school curriculum in 2004. In 2002, the HOD initially believed it was possible for all the Year 11

© NZCER

students who were doing the design technology (wood/metal) course to succeed with achievement standards-focused assessment. However, it soon became apparent that this would not meet the needs of all the students. While the HOD felt he was “flying blind” in the 2002 year, he now sees that meeting the needs of such a wide range of student abilities within one course was not realistic. He also doubts that the level 1 technology course is useful for vocational or life skills. He was unsure as to what other options there were besides the achievement standards-focused NCEA award, would explore this for 2004.

City School C’s HOD believes that his concerns about the devaluing of practical content at Year 11 are less likely to be repeated at Year 12 which offers a greater number and wider variety of courses, more specific to particular interests or future plans. He feels that while these courses are still heavy on the academic emphasis, there appears to be more scope for problem-solving specific to the materials and subject area – a slightly more practical aspect. He suggested that Year 12 also provides more scope for the academically-inclined students, with an extension of many of the intellectual research and planning ideas started at level 1.

Town School F also has plans to cater for the more practically-inclined students in 2004. The HOD plans to offer a Year 12 craft and technology course and a Year 12 industrial pathway course to cater for “trade-minded” students, especially those who have already done Year 11 design technology and don’t want to repeat it at Years 12 and 13. These students need literacy and numeracy skills embedded in a transition arrangement that also fosters “work habit” skills.

Although the HOD of Town School D shares the concerns of other HODs, the school has opted to offer *only* courses assessed by technology achievement standards at Years 11 and 12. This HOD sees fewer “instant results” for technology students in comparison to other subjects. While it may take 13 weeks to earn 4 credits in a technology class, a science class may earn those 4 credits in just 2 weeks. In the HOD’s view, this tends to be a problem for the “slower kids” and she acknowledges that it would probably better meet their needs to have a course made up of a combination of unit standards and achievement standards. The small size of the school and the impact such a class would have on the timetable and balance of courses overall ruled that out. However, the Year 11 technology courses are deliberately quite general – and more so than last year – in order to cater for the interests of most students. Rather than alter these courses by adding or replacing them with unit standards-focused courses, Town School D prefers non-academic students to pursue trades-focused learning through the Gateway programme.

© NZCER

The business of technology: new pathways for students

> NCEA Technology is about business, not technology. (Technology HOD, City School C)

Perhaps this HOD has hit the nail on the head. Counterbalancing the discomfort the HODs felt about the academic being privileged over the practical was a sense that technology subjects are gaining ground in terms of status and an association with a bright “knowledge society” future.

One part of the shift is seen in the relative advance in recognition of vocational pathways for young people generally. The within-subject differentiation we have termed traditional-discipline, locally-redesigned, and contextually-focused in English, mathematics, and science is structuring differing pathways, with some students moving towards the achievement of the NCEA and others moving more towards achievement of the National Certificate of Employment Skills (NCES). Similarly differentiated pathways exist within the technology curriculum area, as manifested by the distinction between NCEA-oriented courses and those which lead instead to other National Certificates or internationally-recognised qualifications in specific industry areas. However, while the differentiation in English, mathematics, and science may still be linked to courses of different status, it is not clear that NCEA technology is necessarily more valued or of higher status than other technology courses.

Another part of the shift in technology’s new status seems to be occurring as it attracts a greater number of higher-achieving students. One HOD said she was starting to see some of the “brightest kids” choosing technology but the biggest challenge was to get enough of them achieving at the highest possible levels. Another HOD also saw the attraction of academic students to technology courses as the biggest challenge. He wanted to be able to show them that there is now a pathway for them in technology. He commented that it is not so much that technology has been intellectualised, because it always had that potential, but that the traditional manner in which teachers chose a “design-and-make” approach could not stand up within the NCEA environment. For this reason, he believed that modular approaches would grow and these would motivate students more. If teachers could be encouraged to design courses of less than a year in length, there could be more modules available per year and better opportunities to meet the needs of the client (student). Certainly this HOD felt that he was seeing the best work he’d seen in years and that it was because the goalposts were clear, with defined standards.

City School B’s HOF commented that the emphasis on a people-product relationship cuts across the traditional view that difficult work equals academic (and high-status) work, removed from the “real world”, with the corollary that anything intimately connected with the real world is of a lower status and less demanding. For him, the focus on problem-solving with technical knowledge is designed to meet real-life needs. However, a major problem is that parents, teachers, and students do not really understand this.

© NZCER

> Where the old technical curriculum might have suggested making a storage box by following the plans, step by step, the new Technology curriculum suggests designing and making a storage box to meet a need for somebody in the wider community. The first methodology is teacher-driven, prescriptive, and instructional; the second relies on the teacher facilitating an enquiry-focused learning environment and approach to problem-solving. (HOF, City School B)

He wants to offer a pathway to students that clearly leads to university – perhaps linking up with study in industrial design or a Bachelor of Arts in Technology (currently offered at Massey University) focusing on product design. He questions why his school does not offer biotechnology or something leading on to trades-focused learning at polytechnics because he sees a place for practical classes, too, including a need for lower-level practical classes for ESOL students as the language component in trades courses is too demanding for them.

For one HOD, the challenge of promoting a new understanding of technology extends to decoding the language of units of work and achievement patterns used by the MOE and NZQA. "If we were to send home reports using that language, it would be meaningless to parents." Two other HODs also reported finding it hard to get parents and students to understand the implications of the Technology pathway through and beyond school. However, another HOF sees the answer to this challenge falling within the responsibility of the technology teachers: "It's about using our technical knowledge intelligently. Our principal is supportive but it's us technology teachers that must make it work." This HOF says the really big dilemma is to refine the aims of technology and provide clear pathways. He rejects unit standards as a default pathway away from the technology curriculum and wants to offer achievement standards, even to be a lead school in doing so. However, the lack of knowledge among senior management, deans, parents and students means that what technology is and where it takes students is seen as uncertain and sits in tension with accepted patterns of decision-making.

> We are supposed to be developing niche markets and technology can do that. But parents still think technology is woodwork and metalwork. We're ten years behind Britain on this, where 25 percent of GDP can be related to design and technology, fed by technology in the schools. (HOF, City School B)

Resources for the new technology

The ability to deliver technology with clear pathways for students is not only compromised by old understandings of what technology is and should do, but by inadequate resourcing that does not match or support the new regime. One HOD pointed out that the Government wants more trades training generally but there are not enough teachers in schools able to direct students to this. He cites the debate over G3 teacher[23] salaries and the failure to resolve the issue as impacting on

[23] G3 is a status where degree-equivalency can be awarded on the basis of experience/skills.

© NZCER

technology subjects in particular. He thought technology teachers had left, when they could have been, and needed to be, retained.

Another HOD struggled to get enough qualified staff to teach all the technology subjects that students want. He also described a lack of facilities for teaching technology at the junior level, with consequent impacts on choices that could be made at the senior level. In this school, technology is taught on an optional basis in Year 10 solely because the school cannot provide the facilities to teach all Year 10 students. This means that the Year 11 technology students are drawn from a much smaller pool. Even where facilities are available, another HOD questioned how appropriate they are for the new curriculum and the directions that technology is taking. Using his own expertise and background, he realised that the current workshops were designed, and built for, adults. He claimed that they serve the needs of maintenance staff, caretakers, and tradespeople but don't work for teaching students. This has also been an issue for tertiary level trades training when working with secondary students on STAR programmes (Vaughan and Kenneally, 2003). This HOD suggested that the best solution would be an integrated technology centre, which he hopes could also address the gender split so that traditionally female technologies (food and fabric) are taught alongside the traditionally male technologies of workshop.

The change in subject content and skills in technology appears to be creating more opportunities for some students but it has also created problems for low (academic) ability students, the traditional clientele of the technical subjects, who tend to struggle with a content that focuses on design planning over hands-on crafting. Correspondingly, the challenge of developing the most appropriate technology pathways for students has drawn attention to a shortage of staff with suitable expertise to teach the new technology curriculum.

© NZCER

Section Nine

Learning in the arts

Introduction

In this section we report on the views of the arts HODs in 5 of the 6 *Learning Curves* schools. (One HOD was unavailable on the day of our visit to the school.) These HODs are developing their understandings of a newly organised curriculum at the same time as they are implementing the NCEA.

The curriculum statement for the arts was the last to be written and released, and arguably the most contentious of all the curriculum statements. *The Arts in the New Zealand Curriculum* provides for 4 separate disciplines - visual arts, music, drama, and dance – to be drawn together under the auspices of one curriculum area and each strand taught in schools by 2003. As ERO has pointed out, this has been somewhat controversial:

> …there has been considerable debate and concern about the concept of the Arts as a 'generic' learning area. The 'generic' label has led to anxiety among arts educators and specialist arts providers… It is important that teachers understand the significant differences between each of the disciplines so that subject knowledge may be brought to bear in planning programmes and teaching in The Arts disciplines (Education Review Office, 2001).

The 6 *Learning Curves* schools' responses to the challenge of a new curriculum and a new qualification can be understood in terms of the manner in which the views of the arts as a "generic learning area" have interacted with views of the arts as separate disciplines, each assessed by their own suite of achievement standards.

Key findings

Visual arts and music courses are offered at all senior year levels in all 6 schools, perhaps reflecting the existence of previous syllabi for these 2 subject areas. Conversely, the newer subject areas of drama and dance are not as commonly taught, or not taught across all senior year levels. The girls' school was the only one to offer a discrete course in dance.

© NZCER

The comments of arts HODs should be read in the context of an arts curriculum that is being made up of subjects which are optional in the 6 schools at the senior year levels. In this context HODs tended to be most concerned about issues of recruitment and retention, related to the status of the arts within the overall school curriculum. Their comments were not necessarily NCEA or NQF-specific; they could equally have made them about the position or role of the arts within the previous School Certificate/Sixth Form Certificate framework.

Most of the HODs interviewed mentioned the lack of status in their particular subject area specifically and for the arts generally. They highlighted a number of different issues related to attracting students into arts subjects and the assessment of arts subjects within the NCEA framework. Some HODs felt that curriculum organisation within their school discouraged and disadvantaged students taking arts subjects. Others were concerned with the number of assessments and overall level of achievement in the arts, particularly as it related to finding a balance between encouraging and retaining students in a relatively low-status curriculum area while maintaining “academic rigour”.

The range and structure of arts subjects

In Sections Seven and Eight we have described the courses offered at Years 11 and 12 in each *Learning Curves* school in the “core” subjects and in technology. The following table shows the arts subjects offered in each *Learning Curves* school at Years 11, 12, and 13. We have done this to underline several notable details about the arts subjects. First, arts subjects specialise at Year 13, unlike technology or the sciences that typically begin to specialise at Year 12 or even earlier. Second, the subject now called “visual art” clearly offers the most choice within the arts curriculum for students, often splitting into more specialised or focused topics, themes, and materials within this year level. These Year 13 influences reach down to impact on choices made at Years 11 and 12 and so need to be kept in mind when the earlier year levels are discussed.

Our comments about the lack of specialisation at lower secondary levels refer both to an intra-disciplinary situation (visual art is not specialised into painting, sculpture, and so on as early as technology subjects might be specialised into fabric or food, for example,) and to a between-disciplines merging of subjects. Since the arts curriculum draws together 4 quite distinct arts disciplines, specialisation in that context can mean specialising within or between those disciplines:

> In Years 9 and 10, students should continue to learn in all 4 disciplines; as a minimum requirement, they must study at least 2 disciplines. In Years 11, 12 & 13, *The Arts in the New Zealand Curriculum* provides the basis for specialist teaching and learning programmes in the arts disciplines (Ministry of Education, 2000).

Some schools in New Zealand are now teaching junior secondary courses that are mixtures of dance and drama (Beals, Hipkins, Cameron, and Watson, 2003). “Collaboration” is encouraged by *The Arts Curriculum 2000* document but the examples given are of combining 2 or more of the

© NZCER

arts subjects into specific multi-disciplinary projects such as puppet shows and music videos or for school-wide events such as cultural celebrations. The only example, of explicit collaboration from our 6 schools is not project- or event-focused but is course-focused – Year 11 Dance and Drama in City School A. [24] It is not clear whether these are examples of collaboration in the sense of separate disciplines turning their energies to one activity or whether they are examples of curriculum *integration*.

Continuing to offer a more holistic approach at senior levels can be motivated by factors other than the unifying vision of the arts offered in the curriculum document. One HOD pointed out a pragmatic need to balance a broad range of choices and to maintain staff interest and skills across a range of intra-disciplinary areas. At this school, some senior subjects (including the arts subjects) regularly have only about 10 students in each course. So some classes – printmaking and photography, for example, – are taught in the same room as a way to "protect" the classes from cancellation. This HOD points out that if those less popular subjects were to disappear, the school would run the very real danger of losing students from the arts generally after about Year 9.

The actual courses offered are summarised in Table 36 on the next page.

City School B consistently offers the most choices in the arts, with some scope to specialise at Year 12 level. Town School F offers the most choices in the practical visual arts (art history is a different "type" of arts subject and indeed in some schools is included in humanities/social sciences departments) but makes its wide range of options available only at Year 13 level. This late specialisation may reflect the school's context and local community needs. Most of the district's employment opportunities are offered in 2 distinct tiers – one involves comparatively unskilled land-focused labour, which attracts some students to become "early school leavers" and the other involves work in what has become a thriving arts community.

[24] City School B HOFs are considering developing a level 3 mathematics/music course for 2005.

 © NZCER

Table 36 **The arts by school**

City School A	**Year 11**	Art (AS)	Music (AS)	Dance and drama (AS)
	Year 12	Art (AS) Art history (AS)	Music (AS) Vocal studies (AS)	Drama (AS)
	Year 13	Painting (AS) Design (AS) Photography (AS) Art history (AS)	Music (AS) Vocal studies (AS)	
City School B	**Year 11**	Art (AS)	Music (AS)	Drama (AS)
	Year 12	Painting & drawing (AS) Art history (AS) Photography (AS)	Music (AS) Music practical (AS and US)	Drama (AS) Performing arts technology (US and Trinity College)
	Year 13	Art drawing & painting (AS) Art history (AS) Photography (AS) Art sculpture (AS) Art design (AS)	Music (AS)	Drama (US)
City School C	**Year 11**	Visual Arts (AS)	Music (AS)	
	Year 12	Art (AS)	Music (AS)	Drama
	Year 13	Art design (AS) Art history (AS) Art painting (AS) Art photography (AS)	Music (AS) Music (US)	Performing arts (US)
Town School D	**Year 11**	Art (AS)	Music (AS) Performance music (US and AS)	Drama (AS)
	Year 12	Art practical (AS) Art photography (AS)	Music (AS)	
	Year 13	Art practical (AS) (counts as 2 subjects)	Music (AS)	
Town School E	**Year 11**	Art (AS)	Music (AS)	Drama (AS)
	Year 12	Art (AS)	Music (AS)	Drama (US)
	Year 13	Painting (AS) Design (AS)	Music (AS)	
Town School F	**Year 11**	Art (AS)	Music (AS)	Drama (AS)
	Year 12	Practical art (AS) Photography (AS)	Music (AS)	Drama (AS)
	Year 13	Painting (AS) Printmaking (AS) Sculpture (AS) Design (AS) Photography (AS)	Music (AS)	

NB: None of the case study schools offer dance as a separate subject. At Town School E, Year 11 computer studies, and Year 12 computer studies and media studies, are *managed* within the arts department (and listed as part of the arts curriculum area in school documents).

© NZCER

The subjects of music and visual art are the most common arts subjects to be taught in the 6 case study schools. This is perhaps not surprising given that the national curriculum statement for the arts replaced existing music and art syllabuses. It also created the 2 new areas of drama and dance, which were previously been taught, respectively, as part of the English curriculum and as an adjunct to the PE curriculum.

Music and drama tend to be offered as discrete subjects. Three schools offer particular music subjects in addition to their more general (achievement standards assessed) music courses. The girls' school offers vocal studies at Years 12 and 13. City School B offers a unit standards-focused practical music course (Year 12) and City School C offers a unit standards-focused music course at Year 13.

City School B offers unit standards-focused courses in drama at Years 12 and 13. One of these courses also includes some assessment through Trinity College London.[25] Where dance is offered at all it is part of a course that also includes drama. Conspicuously, only City School A, the girls' school in the sample, offers this discipline as yet, and then only at Year 11.

Achievement standards in the arts disciplines

Most of the arts subjects offered in the 6 schools are assessed with achievement standards to be credited towards the NCEA. Unlike the technology achievement standards which are written in a manner that generalises key processes and effectively restricts students to gaining credits in one technology subject, the arts achievement standards are discipline-specific. Details of the standards offered in each subject at Year 11 are summarised below. Students who choose to study 2 or more arts disciplines could conceivably achieve an NCEA award in which most credits (outside those in the compulsory subjects) have been gained from this one curriculum area. Nearly all of the 6 schools were teaching all of the achievement standards for each discipline in their courses – that is, these courses were less likely to include unit standards or exclude certain achievement standards than were courses in the subject areas we reported in earlier sections, making them *traditional-discipline* courses.[26]

Level 1 music

1.1 (I) Perform contrasting music as a featured soloist (6 credits)

1.2 (I) Perform music as a member of a group (3 credits)

1.3 (I) Compose pieces of music (6 credits)

---

[25] Trinity College London is a body which provides syllabi and examinations for music, drama, speech, and dance all over the world. It is related to Trinity College of Music which is a provider of degree study programmes in music.

[26] There are also a higher proportion of internally assessed achievement standards for the arts than for English, mathematics, and science achievement standards.

 © NZCER

1.4 (E) Demonstrate aural skills through description and transcription of simple music (3 credits)

1.5 (l) Identify, describe and explain fundamental materials of music (2 credits)

1.6 (I) Demonstrate knowledge of music works (4 credits)

Level 1 visual arts

1.1 (I) Research art and artworks from Mäori and European traditions and their contexts (3 credits)

1.2 (I) Use drawing processes and procedures (5 credits)

1.3 (E) Generate and develop ideas in making artworks (12 credits)

1.4 (I) Extend ideas in other media and techniques (4 credits)

Level 1 drama

1.1 (I) Use drama techniques (4 credits)

1.2 (I) Use elements and conventions to devise and perform drama (4 credits)

1.3 (I) Demonstrate knowledge of a drama or theatre form in performance (3 credits)

1.4 (I) Perform an acting role (4 credits)

1.5 (I) Perform a technical or production role (4 credits)

1.6 (E) Understand and reflect on drama processes and performance, applied to new context(s) (5 credits)

Level 1 dance

1.1 (I) Compose movement sequences (6 credits)

1.2 (I) Perform dance sequences (6 credits)

1.3 (I) Perform a dance as a member of a group (4 credits)

1.4 (E) View, interpret and respond to a dance performance (4 credits)

1.5 (E) Demonstrate knowledge of a dance genre or style (4 credits)

The status of the arts within the school curriculum

The majority of HODs' comments in interviews related to recruitment and retention issues in the arts subjects. The HODs were well aware that they did not have the same numbers of students as the compulsory subjects of English, mathematics and, in most of our 6 schools, science. They were also aware that the optional status of arts subjects means they did not have the same kind of status as the compulsory subjects. As a consequence the HODs tended to be preoccupied with a sense of having to compete or battle for students. First, HODs battled for students' hearts and

© NZCER

minds with a view to changing perceptions which maintain the relatively low-status of the arts. Second, HODs sought an increase in student numbers in arts courses in order to keep them (and perhaps their own jobs) viable.

One of the HODs was positive about her school experiencing a minor resurgence in arts subject enrolments. However, this seemed unrelated to the NCEA and one of the main reasons for the resurgence actually seems to reinforce a lack of status of the arts. Many of the Year 12 arts students in this school are foreign fee paying students, taking those subjects “just for the language and experience”. Another HOD believed that optional status hurt the arts because choice was so superficial. According to her, only about half the students at the school chose what they wanted to study; the rest chose academic subjects as a result of pressure from their parents. (Students’ perceptions of the influences on their choices are described in the following 3 sections.)

Several HODs thought that the relative lack of status for the arts subjects affects curriculum decisions made for junior secondary students in a way that compounds barriers to them choosing these subjects at Years 11–13. One HOD reported that junior students at the school experience just 90 hours of learning in the arts at Years 9 and 10 (30 hours for one term in visual arts, drama, and music respectively). This HOD believed that students in other schools completed around 200 hours of arts learning in Years 9 and 10. Consequently, her Year 11 students were taking longer to achieve all the level 1 credits. Indeed, the school aims for students to gain all of the level 1 achievement standards in an arts discipline by the end of Year 12, if they are still taking arts subjects by that time.

At a second school the Year 9 and 10 students choose just 2 arts subjects to study, with the consequence that they are exposed to these types of subjects less than they are to other subjects. In this situation the HOD believes that it is not surprising parents encourage their sons and daughters to choose vocational subjects or subjects in which they already have experience of achievement.

Another HOD thought that in his school the top (most successful) students are “siphoned off” and directed into academic courses by the deans, reinforcing “prejudice” as the basis for decision-making. As he pointed out, academic students are often very creative and good at arts subjects so their absence from arts courses is a real blow to the status of the curriculum area overall in terms of being able to celebrate academic achievement. However, another HOD was pleased that the arts subjects seemed to be attracting more “academic students”.

Beyond the academic/vocational divide

The arts has never neatly fitted into either side of the academic/vocational division that has traditionally been an organising principle of the New Zealand school curriculum. Instead, the arts has tended to be seen as an “easy option” at school. Academically high-achieving students have tended to be discouraged from taking arts subjects except where the subject has been associated with “high culture” (especially for subjects such as art history) and where it caters for students

© NZCER

who are creative and also academically-oriented. Students who want to “work with their hands” or have a strong vocational job inclination have often also been directed away from the arts into the craft and workshop subjects (*see* Section Eight). So the arts disciplines have tended to occupy a fairly precarious position in schools, without compulsory or core status, and without the clear-cut constituency of the other subject areas. This is still the case, even though the arts is now defined as a core curriculum area for secondary students in Years 9 and 10, and the NCEA has been implemented for students at Years 11 and 12.

The music and visual arts courses in the 6 schools all offer the full suite of achievement standards and are very much traditional-discipline courses. However, there are contextually-focused versions of music and visual arts courses being offered, too. City School B offers a “practical music” course offering a mix of achievement and unit standards, in contrast to its “music” course which offers only achievement standards. Town School C offers 2 Year 11 courses called “music”, one based on achievement standards and the other on unit standards. There are 3 performance and performance arts courses – at Year 12 for Town School D and Year 13 for City Schools B and C.[27] One HOD believed that academic students were well catered for at her school, particularly in art and photography courses. However, echoing the concerns of some Technology HODs, she wanted to see a “recreational art” course, or a craft-focused art option. This contextually-focused option could better cater for the less academically successful students that this HOD worried would be increasingly shut out of the arts.

There appears to be a lesser degree of local-redesign in the courses currently on offer at our schools, particularly for Years 11 and 12. However, several HODs talked about the potential here. As we have mentioned previously, one HOD interviewed (not an arts HOD) is exploring the possibilities for a music/mathematics course.

City School B is exploring more holistic approaches that use assessment portfolios which attempt to integrate subjects and their content. The HOD thought that as everyone got more used to the NCEA, the school would be able to become more flexible. She suggested that night classes for catch up could be used (though teachers would probably not be so enthusiastic!). She also suggested that group performance in music could be taught to students interested in entering Rock Quest or in being in a small orchestra. Though it would make for timetabling nightmares, the NCEA highlighted the potential for flexibility. The school already aims to have all students receive credits for all the level 1 achievement standards by the end of Year 12 and the assessment methods used allow students to study level 1 and 2 together. This seems to be moving closer to some of the collaboration suggestions made in *The Arts Curriculum 2000*.

Not all collaboration is produced from a desire to be more flexible. At Town School F, managing several levels in one class is a necessity because of small class numbers at each year level. The

[27] Having just one arts course on offer for each subject is a function of there being fewer students taking arts subjects, and arts subjects not being compulsory. It should also be noted that visual art, music, and drama are all in the top 10 most popular individual subjects for students in the 6 case study schools for 2002 and 2003.

 © NZCER

HOD usually manages this by employing “spiral learning” to teach students working at different levels within the one classroom. Extension exercises are available for some students. This year the HOD reported resolving a calculus/music timetable clash at Year 13 by giving up some of her non-contact time to teach the Year 13 music class. She has found this much easier than her usual routine of teaching the Year 12 and 13 students together in one group. The situation has also helped with what the HOD thinks is quite a leap in learning demands between level 1 and level 2, with a shift in focus from description and recognition at level 1 to in-depth analysis at level 2, which some Year 12 students find difficult.

Drama and dance are the least offered arts subjects in our 6 schools. They are also subjects which might straddle all 3 of our course descriptors or perhaps best sit within a local redesign category. Drama, for example, has a traditional-discipline focus in its previous incarnation as a part of the English curriculum. However, it also has elements of performance which give it a contextual focus like the performance music courses at City School B and Town School D. Where drama is combined with dance, as in City School A, the course might be considered a locally-redesigned course. Dance courses, indeed dance as a subject area, can be considered locally-redesigned as it has no traditional-discipline antecedents in the school curriculum. We may later see contextually-focused dance courses.

The arts beyond school

With the arts courses variously falling into (for music and visual arts), and straddling (for drama and dance), traditional-discipline, contextual focus, and to some degree, local-redesign categories of course type, differences emerge between teachers and parents over their understanding of the opportunities afforded by studying arts subjects. One HOD was struggling with recruitment and retention being adversely affected by parents who saw the arts as a sort of dumping ground for (academically) failing students. She felt frustrated and was trying to get parents to see that the arts does involve plenty of “academic rigour”.

On the other hand, another HOD reported a certain advantage to the arts courses offering the full suite of achievement standards – parents believed that achievement standards were inherently better than unit standards, simply because the former provide for an “excellence” grade. However, this school is very committed to making use of unit standards, leading to other national certificates, so if enrolments in arts courses were to increase because of a perceived superiority of achievement standards, it might add to the school’s difficulties in communicating its overall vision about national certificates (and unit standards) to staff and parents. The use of achievement standards was a possible reason that another HOD thought academically successful students were “not avoiding the arts as much” now.

At another school the HOD described challenges that turned on a link between the arts and paid employment. With plentiful employment opportunities in their local community, student numbers in all subjects and courses decrease at Year 12 and, in particular, at Year 13. In response the arts

© NZCER

teachers have tried to “cram the curriculum content and learning” into Years 11 and 12, knowing students will not be there for Year 13. However, since parents continue to favour subjects for which they see a direct job link, there is a reduction in numbers of students in arts subjects at Years 11 and 12. Similarly, another HOD had tried to highlight direct and indirect job links to parents. She had even cited research showing that the arts involve skills that creative, future-oriented societies need. However, she reported that parents continued to see music in fairly narrow (and traditional job-focused) terms. They liked the idea of their son or daughter being able to play a musical instrument but could not relate to them possibly becoming a musician. Indirect links beyond that, using broader creative skills, did not strike a chord with the parents.

Several HODs also commented on difficulties catering to students who tended not to achieve well in school, a similar issue to that raised by technology HODs in the previous section. In several schools the less academic, and not so vocationally driven, students who had typically taken arts subjects struggled to achieve well in the subject. The HODs involved suggested it was because the arts courses are working to achievement standards, which not only have more status than unit standards but are thought by many parents and students (and possibly some HODs) to be of a higher level of difficulty in that they are less contextually-focused and have more traditional-discipline features.

This intersected with the sheer number of assessments in the arts. In one school the HOD described level 1 visual arts students as being “overwhelmed”. In consequence they were lost to the arts, or at least to visual art, in Year 12. In another school no students enrolled for the Year 12 design and photography class in 2003. Nevertheless, one of these HODs insisted that courses should continue to offer all the achievement standards at level 1 so that students are not limited in their choices or their ability to achieve at level 2. “We don’t just want to create classes of students who can play 3 chords on the guitar but can’t compose.”

The corollary of this struggle was in retaining the most academically successful students. As with other HODs in other subject areas, 2 HODs for the arts voiced concern over the NCEA “flattening out” achievement at the top level. One HOD voiced concern over whether the excellence grade in the achievement standards is set too high, making the arts unattractive for academically successful students. Another worried that the additional efforts of academically successful students who “go beyond the marking schedule” will “simply not count”, thereby putting them off arts subjects. These issues have been canvassed for the NCEA generally. However, in the context of a status-poor curriculum area such as the arts, they may become a critical factor in attempts to attract students by encouraging (and rewarding) high achievement. Framing the issues in this way also creates a pull to continue accepting a more traditional academic/vocational division in school subjects. Despite the difficulties discussed here, there are some contextually focused arts courses and HODs have outlined potential in the arts for the development of more locally-redesigned courses.

© NZCER

Section Ten

Influences on students' choices of English and mathematics options

Introduction

In all 6 *Learning Curves* schools, mathematics and English are compulsory at Year 11, with one of several options of each subject available to students. These options are detailed in Section Three. At Year 12 English remains compulsory for all students whilst mathematics becomes optional. In the analysis of the data which follows, the numbers for Year 11 locally-redesigned mathematics courses and contextually-focused mathematics courses have been combined because of the relatively small numbers of students taking these courses.

Key findings of this section

At Year 12 mathematics becomes optional but 81 percent of all students continued to take a version of this subject in 2003. The majority of Years 11 and 12 students studied mathematics and English in traditional-discipline courses in 2003. There was considerable inter-school variation in the proportions of students who chose the contextually-focused or locally-redesigned options, and more students took these courses in mathematics than in English.

A third of the students who took a contextually-focused or locally-redesigned option in mathematics were also taking a contextually-focused option in English.

Around three-quarters of students in both subjects, at both year levels, said their choice of option was influenced by future plans – a much higher response rate than for the other 4 factors provided. Future study, future career, and life skills were chosen as influencing sub-factors by around a half of all students at both year levels.

Expectation that the chosen English or mathematics option would be enjoyable was identified as an influencing factor by about a half of the cohort at each year level. Challenge and interest were the most frequently selected sub-factors of enjoyment for both subjects at both year levels.

© NZCER

Parents were the people most likely to be identified as having influenced choice of options in both subjects at both year levels. While fewer Year 12 students reported this influence for English, a third of the students taking Year 12 mathematics said their parents influenced this choice.

Students taking contextually-focused or locally-redesigned options were more likely to say that the prospect of gaining "easy NCEA credits" had influenced their choice of English or mathematics option, and these students tended to also choose "I thought it would be easy" as a sub-factor of enjoyment. Relatively few students were taking such options and the overall size of this type of response was much lower than for the factors of future plans, enjoyment.

Students were mostly happy with their choices and perceived that their parents were happy, too. Around 30 percent of Years 11 and 12 students in both subjects would like a change to more interesting learning activities and about a quarter would like there to be less assessment pressure.

A caveat about "choice" and compulsory subjects

In this section we discuss the findings in terms of *which* mathematics and English options the responding students "chose" and *why* they chose them. But what do we mean when we say that students have *chosen* subjects that are actually compulsory for them to take? Some of the students raised this issue themselves when they filled out our questionnaire. A small number of students felt that the categories of reasons for choosing each subject (e.g. enjoyment of the challenge or the teacher, timetable fit, or the influence of future plans) were inapplicable for subjects about which they had little authentic choice. Notwithstanding this, most students completed the sub-categories to indicate the factors that had most influenced their choices of (or at least acquiescence to) option placements within the compulsory subjects.

The question of what constitutes valid choice partly reflects the realities of choice-making for students in school. In general, students' choices operate within strict confines. At the broadest level, for example, they don't necessarily "choose" to attend school at all or, to wear a uniform if they are required to do so. However, they can choose some of the classes they attend and they can choose some aspects of a uniform, or to wear some school-approved fashion accessories with the uniform. Choices about subject options occur within limits that are contingent on each school's mix of teaching staff capability, timetable structure, course prerequisites, staff perspectives on the relationships between "ability" and various types of options/subjects and their judgments about local interests and needs.

A limitation occurs in terms of the *timing* of student choice-making. Students are usually required to make their subject selections late in the year prior to the one in which they will be studying that subject. Changing one's mind is often difficult because of the way this impacts upon school time-tabling and staffing. Even though it is likely, logical, and even desirable at times, for students to change their minds about subjects they have chosen, particularly as they learn more about their

© NZCER

interests and needs and how their subject choices might relate to their future plans, they may not be able to do so.

Finally, students are guided into the options they select. Deans, careers co-ordinators, and subject teachers have a role to play here, meeting with students to help them plan their subject selections. Choice should be understood as the result of various influences regardless of whether or not the student has actually identified a particular person (e.g. a Dean or a parent) as being of particular influence in making that choice.[28] In all 6 schools, previous examination results also play a role in determining which options students will be counselled to select. Students are given the responsibility of making the choice – they fill out the selection forms provided by the school. This means that the choice of which version of mathematics and English they will take is ultimately theirs — and it is related to what each student believes will be in their best interests. There is a component of choice-making in relation to compulsory subjects that is implicitly tied to student self-concept.

Reporting the quantitative analyses

Chi-square tests have been used to test for significant associations between pairs of variables at the 5 percent level. All chi square tests have been applied to collated data for the Year 11 (n= 912) or the Year 12 (n= 620) student cohort as a whole. This approach, while generating large samples for analysis, does not take account of differences in patterns of response between schools. Some patterns that showed significant associations for the collated data were only sustained as significant in 1 or 2 schools when school effects were checked. For this reason, findings of significance have been treated very cautiously and the following analysis should be read with this caveat in mind.

Patterns of responses between subjects have not been compared for significant differences. Almost all students take English and mathematics and most take science at Year 11. All take English at Year 12, most continue to take mathematics, and some students take more than one science. Because individual students may respond to a specific factor in similar ways in different subjects, chi-square tests are not an appropriate method of testing comparisons of these factors between subjects. While individual student effects could be tracked, such an analysis is beyond the scope of this report.

28 In the questionnaire, students were asked to identify people who had influenced their choice of subject.

© NZCER

Patterns of students' choices in English

Most students selected the traditional-discipline English pathway at both Year 11 and Year 12, although choice of other types of options (including choosing not to take English at all) increased somewhat at Year 12. Table 38 below summarises students' choices of options at both year levels.

Table 37 **Percentage of students choosing the various English options**

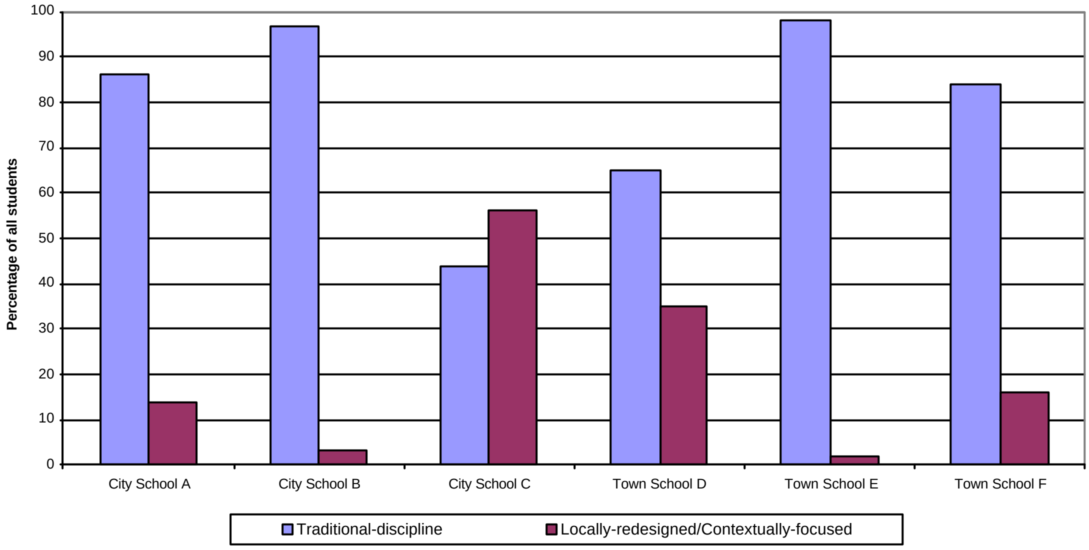
Year 11 option choices	**% who chose this option**
Traditional-discipline	86
Contextually-focused	11
English at another year level	1
No English, Mäori, or ESOL reported	2
Year 12 option choices	**% who chose this option**
Traditional-discipline	77
Contextually-focused	16
Year 11 English option	1
Year 13 English option	.5
No English, Mäori, or ESOL reported	6

There was some variation in the percentage of Year 11 students taking the contextually-focused option at each of the 6 schools, ranging from 2 percent at City Schools A and B to 24 percent at City School C. The range widened at Year 12 (2 percent at Town School E to 56 percent at City School C) when more students overall chose contextually-focused English options. Between-school variation at Year 12 is shown in Figure 1 on the next page.

Uptake of contextually-focused courses, designed to take advantage of the assessment flexibility offered by the NCEA, was cautious, especially at Year 11. For most students at this year level the subject called "English" will adhere relatively closely to the topics and skills assessed by the full suite of achievement standards at this level, as summarised in Section Seven. While there was some broadening of options chosen at Year 12, the majority of the 2003 students across the 6 schools continued to learn English in courses that were based on traditional content and skills.

© NZCER

Figure 1 **Year 12 students' choices of English options in the 6 schools**



Factors influencing students' English choices

For each of their individual subjects in turn, students were asked to choose reasons that explained why they had chosen this particular subject, from a number of factors, some of which broke down into sub-factors. The general categories were:

- It fitted my timetable.
- I thought it would give me easy NCEA credits.
- I expected to enjoy it.
- I need it for my future plans.
- Talking with other people encouraged me to consider it.

Tables 38 and 39 summarise overall patterns of Year 11 and Year 12 students' responses to the 5 choice factors presented on the questionnaire, with respect to their English option choices. The grey-shaded boxes on the left-hand side of the tables show the 5 factors. Choices of sub-factors provided are shown in the white boxes on the right-hand side of the tables. Both sides of the table add to more than 100 percent because students could make multiple choices. On average, Year 11 students responded to 2.5 of the 5 factors, with 25 percent indicating only one factor and 4 percent indicating all 5 factors. Year 12 students responded to 2.4 factors on average, with 29 percent indicating only one factor and 3 percent indicating all 5 factors.

The 2 tables show many similarities in the choice factors and sub-factors identified by Year 11 and Year 12 students.

At both year levels:

- Future plans were the factor cited most often.

© NZCER

- The sub-factors of future career, life skills, and future study were selected by between 58 and 69 percent of students.
- Enjoyment and talking to others were the next most frequently selected factors, and were chosen by similar numbers of students.
- The sub-factors for enjoyment were ranked in the same order, with expectations of challenge and interest the most frequently mentioned sub-factors.
- The sub-factors for talking to others were ranked in the same order, with parents mentioned most frequently and teachers second most frequently, albeit by less students at Year 12 than at Year 11.
- Expectations that English would be easy were chosen least often as a sub-factor of enjoyment.
- "Easy NCEA credits" and "it fitted my timetable" were chosen far less often than the other 3 factors.

© NZCER

Table 38 **Factors influencing Year 11 students' choice of English option**

Future plans	76%
Enjoyment	59%
Talking to others	56%
Timetable	34%
NCEA credits	27%

Future plans 76%:

Life skills	69%
Career	65%
Future study	58%
Travel plans	23%

Enjoyment 59%:

Challenge	63%
Interest	63%
Friends in class	55%
Liking teacher	53%
Being good at it	40%
Practical aspects	35%
It's easy	30%

Talking to others 56%:

Parents	42%
Teachers	36%
Dean	21%
Someone else	14%
Careers teacher	8%

© NZCER

Table 39 **Factors influencing Year 12 students' choice of English option**

Factor	%
Future plans	70%
Talking to others	57%
Enjoyment	51%
Timetable	32%
NCEA credits	22%

Future plans:

Career	65%
Future study	64%
Life skills	58%
Travel plans	19%

Talking to others:

Parents	28%
Teachers	23%
Dean	14%
Someone else	8%
Careers teacher	7%

Enjoyment:

Challenge	58%
Interest	57%
Friends in class	45%
Liking teacher	43%
Being good at it	38%
Practical aspects	27%
It's easy	23%

© NZCER

Response patterns and course options

Figures 2 and 3 show the relative frequency of responses from students taking traditional-discipline English courses and those taking contextually-focused English courses. At both Year 11 and Year 12, more students taking contextually-focused English courses said they were influenced by the expectations of enjoyment and the prospect of "easy NCEA credits". At Year 12, more students who were taking traditional – discipline courses said they had done so to fit English into their timetable. In Section Five we noted that demand for contextually-focused courses had taken some schools by surprise so these responses may be from students who missed out on the limited places made available.

Figure 2 **Year 11 influences on English option choice**

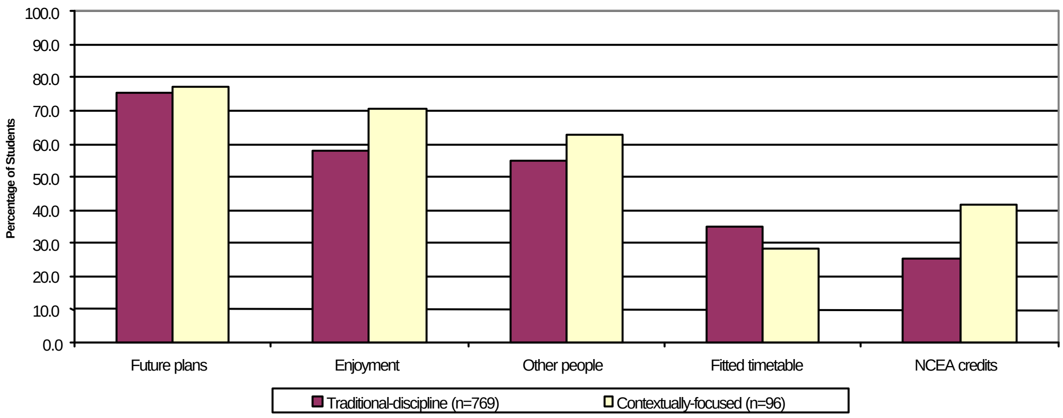
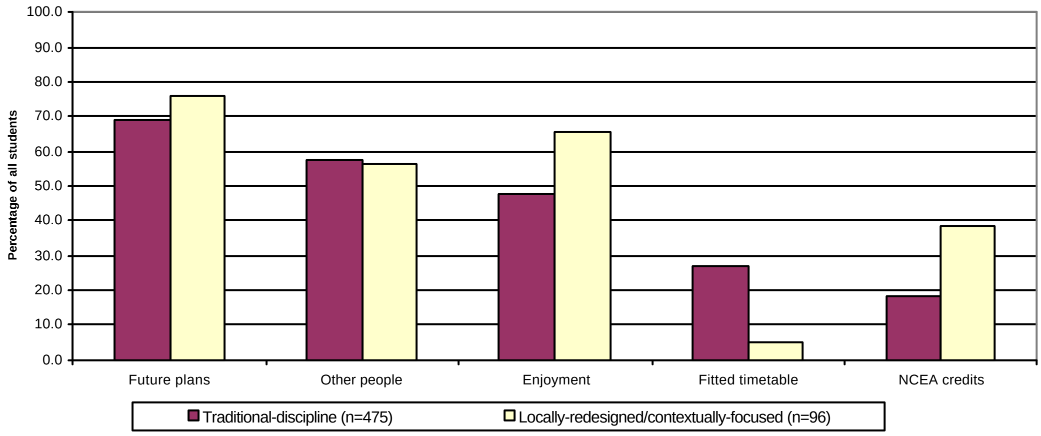


Figure 3 **Year 12 influences on English option choice**



© NZCER

Thinking ahead – choice of English option in the light of future plans

As shown in Figures 2 and 3, future plans appeared to be uppermost in students' minds when they made their choice of English options, whichever type of course they chose.

For this factor, there was no difference between frequency of responses from students choosing the traditional-discipline or contextually-focused options, at either Years 11 or Year 12. However, some differences did show up in the influence of sub-factors of future plans, as shown in Figures 4 and 5. Year 11 students who chose the future plans factor also selected an average of 2.2 of these 4 sub-factors, with 37 percent choosing only one sub-factor and 18 percent indicating all 4 sub-factors. Year 12 students chose an average of 2.1 sub-factors, with 40 percent indicating only one sub-factor and 13 percent indicating all 4 sub-factors.

Figure 4 **Influence of future plans on Year 11 choice of English option**

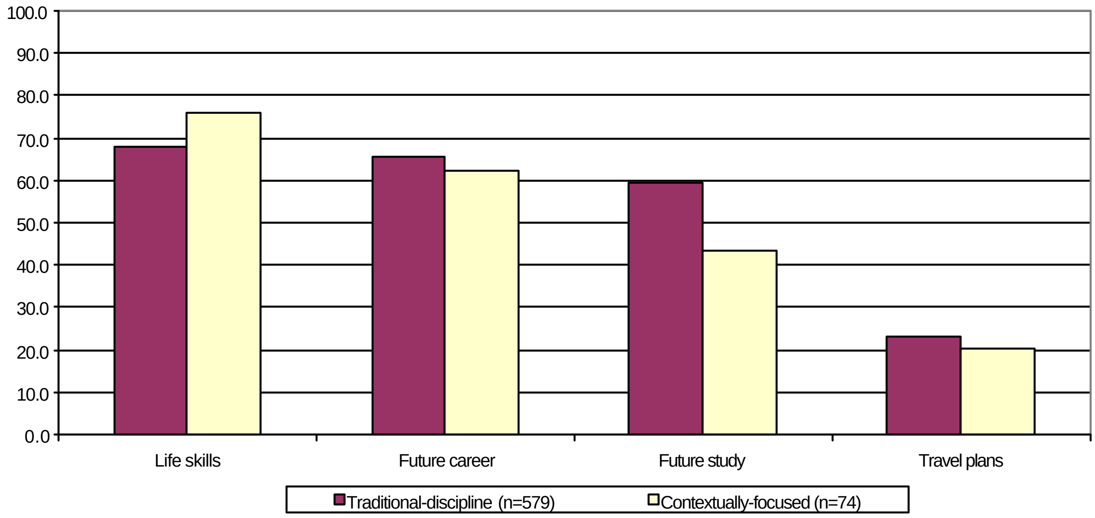
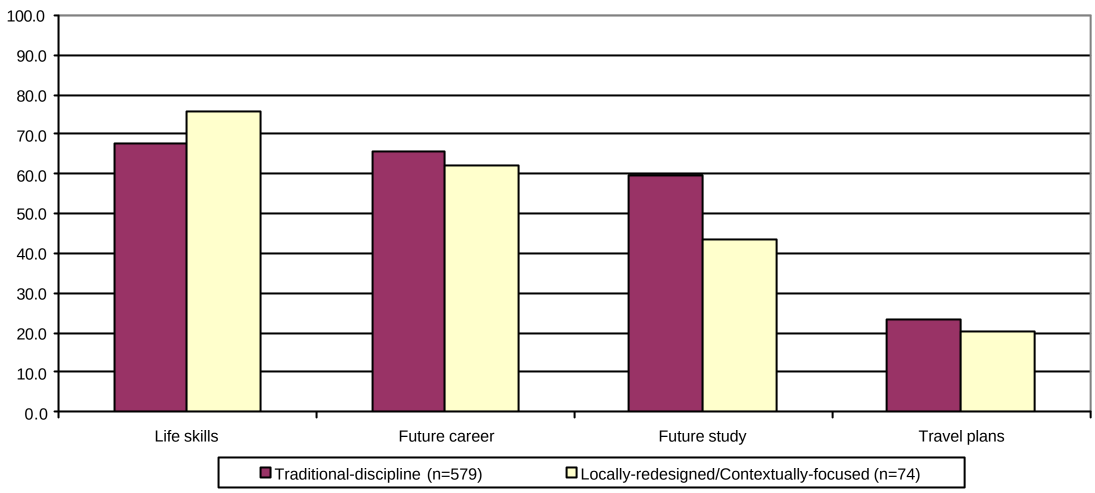


Figure 5 **Influence of future plans on Year 12 choice of English option**



© NZCER

Both Year 11 and Year 12 students who reported being influenced by "future plans" when choosing an English option were more likely to have been influenced by the sub-factor of "future study" if they were taking a traditional-discipline version of English. At Year 12 there was an association between choice of the sub-factor of future study and choice of "I'm good at it" (a sub-factor of expectations of enjoyment. This could mean that these students chose traditional-discipline courses at Year 12 in the expectation of success, or it might be that they recognised that skills in English are important for any future study.

Students choosing a contextually-focused English course were significantly more likely to have been influenced by future travel plans, at both Year 11 and Year 12.

Choosing an enjoyable English option

Findings from the first year of *Learning Curves* indicated that "enjoyment" was the biggest single influence on student subject-choice across the overall curriculum (Hipkins and Vaughan, 2002a, p. 104). The questionnaire design in 2002 was not sensitive enough to pick out exactly what students had thought they would enjoy about their various subjects. In 2003, the questionnaire was redesigned so that those students who selected "enjoyment" as a factor that had influenced a specific subject-choice could also specify which of a range of sub-factors they had expected to contribute to that enjoyment. The sub-factors provided on the questionnaire were based on a combination of the 2002 *Learning Curves* findings with our experience and findings in other research projects involving senior secondary students (Boyd, McDowall, and Cooper, 2002; Vaughan and Kenneally, 2003).

Year 11 students who chose the enjoyment factor also chose an average of 3.4 of these 7 sub-factors, with 18 percent indicating only one sub-factor and 7 percent indicating all 7 sub-factors. At Year 12, students chose an average of 2.9 sub-factors, with 22 percent indicating only one sub-factor and 4 percent indicating all 7 sub-factors.

It is possible that the repositioning of some of the 2002 choice factors as sub-factors of enjoyment influenced students' response to the influence of enjoyment overall.

Unlike future plans, expectations of enjoyment influenced the choice of more of the Years 11 and 12 students who chose contextually-focused English courses than students who chose traditional-discipline courses. There were also differences in choices of sub-factors that students expected would make the study of their selected English options enjoyable. Figures 6 and 7 document these patterns.

© NZCER

Figure 6 **Enjoyment influences on English option choice at Year 11**

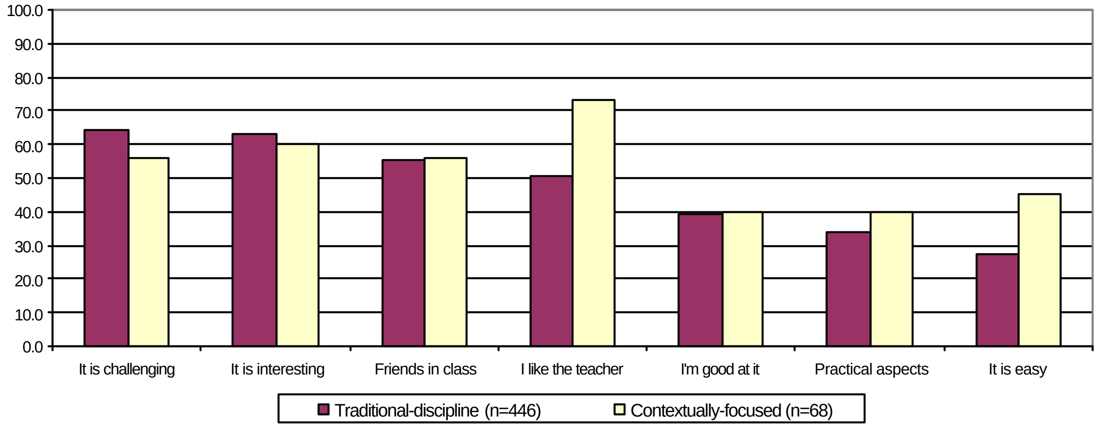
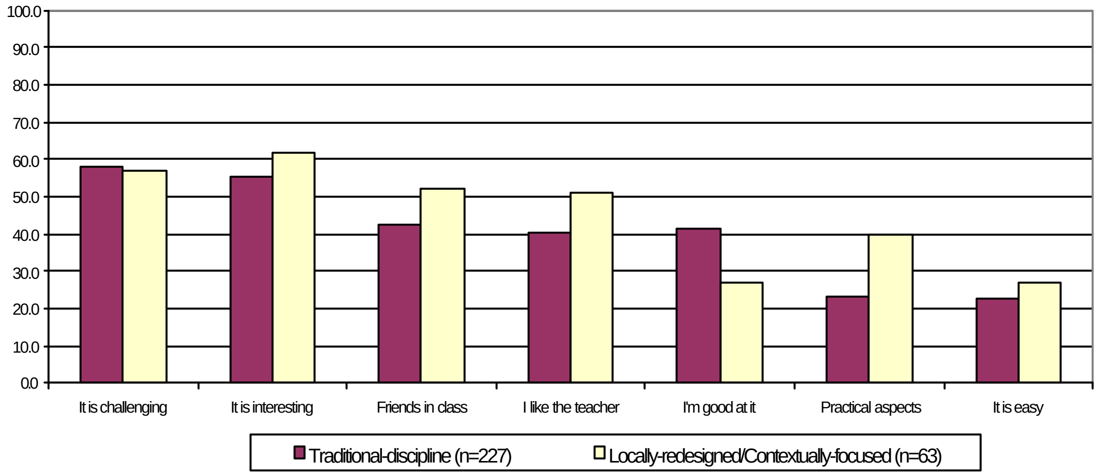


Figure 7 **Enjoyment influences on English option choice at Year 12**



In our first report we speculated that students were not choosing subjects for enjoyment in the expectation that they would be easy. Instead, we postulated that students might be looking for, and expecting to enjoy, challenge and stimulation in their subjects. We justified this with reference to overall response patterns for subjects such as history, graphics, and art (Hipkins and Vaughan, 2002a). The 2003 findings demonstrate that many students did indeed expect to enjoy challenge in English. Furthermore, Figures 6 and 7 show that there were only small differences in the percentages of Years 11 and 12 students in each type of English option who linked enjoyment to expectations that their choice would be challenging. The same pattern holds for the expectation that the option chosen would be interesting.

Differences did show up, however, in responses to other sub-factors. At Year 11, students who had chosen contextually-focused options were more likely to link their choices to expectations that their course would be easy. They were also more likely to link expectations of enjoyment to

© NZCER

their liking of the teacher. At Year 12, more students linked enjoyment to expectations of practical activity in contextually-focused English courses than in traditional-discipline courses.

The relationship between enjoyment and liking the teacher is perhaps not surprising because other research on similar types of contextually-focused courses has shown that the relationship between the student and the teacher is linked to students' success, self-esteem, and enjoyment of the course or programme (Boyd et al, 2002; Vaughan, 2003). What, precisely, the students liked about the teacher that influenced their subject-choice is open to speculation – it could be personality, teacher style of curriculum delivery, or even what other students said about the teacher. Seventy percent of the Year 11 English students in contextually-focused courses who said they were influenced by talking to a teacher also reported being influenced by liking the teacher. It may be that this relationship is more important for less-confident students.

Year 12 students in traditional-discipline courses were more likely to link their choice to previous success in the subject. There was increase in the overall percentage of students who chose a contextually-focused English option at Year 12. It may be that these 2 findings are linked, reflecting some students' reassessment of their relative ability in this subject, or advice about their choice that they were given by other people.

People who influenced choice of English option

Year 11 students who chose the factor talking to other people chose an average of 1.8 sub-factors, with 50 percent choosing one sub-factor and 3 percent choosing all 5 sub-factors. Year 12 students chose an average of 1.8 sub-factors, with 52 percent choosing one sub-factor and 2 percent choosing all 5 sub-factors.

At both year levels, parents or teachers had more influence on students' English choices than deans or careers teachers. Although a range of other people were mentioned in the open response category, no one type of person (for example, "my sister") was mentioned by more than 5 percent of responding students.

Figures 8 and 9 show patterns of responses to the sub-factors at Year 11 and Year 12 for both types of courses. More Year 11 students taking contextually-focused English courses said parents influenced their choice and this difference became more marked at Year 12. Because English is seen as being important for future plans, it may be that the prospect of choosing less familiar contextually-focused options triggers parental concerns that need to be debated and resolved.

© NZCER

Figure 8 **Influence of talking to other people on Year 11 English option choice**

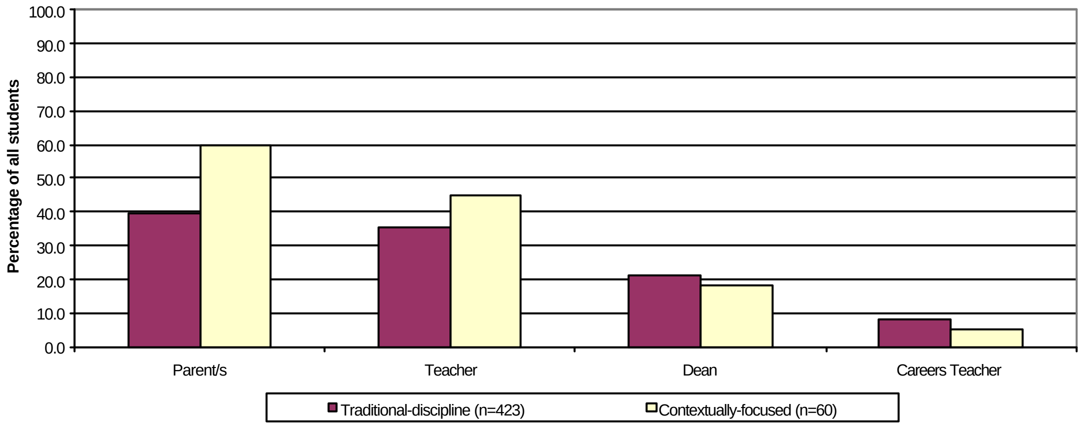
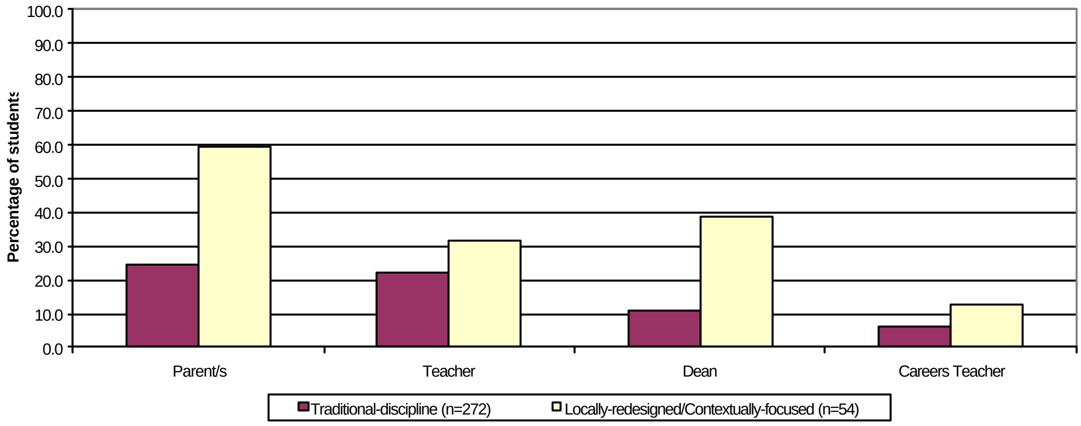


Figure 9 **Influence of talking to other people on Year 12 English option choice**



Deans were more likely to be mentioned by students who had chosen to take contextually-focused options at Year 12. All 6 schools made some use of their students' individual Year 11 qualifications data when confirming their 2003 Year 12 course choices. This response pattern probably reflects a requirement that students who were seen as more "suited" to contextually-focused options consulted the Year 12 dean before confirming this choice.

In 2002 we were somewhat surprised by the relative lack of influence of the careers advisers on students' subject choices. Feedback from a careers adviser and other NZCER research in the senior secondary area offers an interesting possible explanation for the lack of apparent careers adviser influence. Some careers advisers take a deliberately low-key approach in advising students on subject-choice options. These advisers regard *not* being cited as an influence by students as indicative of their success in giving students enough information, and listening well enough to students discussing their aspirations, so that students feel the subject-choice decisions are all theirs. It is also possible that this low-key approach might involve careers advisers filtering information or advice through to parents – as the best people to discuss choices with the student.

 © NZCER

Does the prospect of achievable NCEA credits influence students' choices?

Relatively few students reported "easy NCEA credits" as a reason for choosing their English option (27 percent at Year 11 and 22 percent at Year 12). While this factor was of less influence than any other factor overall, it was chosen more often by the relatively small number of students who chose contextually-focused English courses at both Year 11 and Year 12 (42 percent at Year 11 and 39 percent at Year 12).

Thus, at both year levels students who chose contextually-focused English options appeared to be more likely to perceive that NCEA credits would be easy to get – or that credits were achievable for them – than were the students who chose the traditional-discipline options. A similar relationship between alternative subject versions and perceived easiness, or the achievable nature of credits, existed for mathematics.

The relationship between choice of alternative subject options and perceived "easy credits" suggests a number of possibilities. Students may be aware that choosing a contextually-focused path will still lead, not only to *a* qualification, but to the *same* qualification (NCEA) as traditional-discipline pathways in the same subject. In Section Seven we outlined the predominance of unit standards-focused assessment in most of the contextually-focused English, mathematics, and science options.[29] It appears that credits from unit standards are perceived by students (and probably also the teachers who set up the courses) to be easier to attain than credits from achievement standards, making NCEA seem more attainable for students who in the past may not have achieved School Certificate. Whether or not credits for unit standards are actually easier to achieve than those for achievement standards is another question. Our conversations with the HODs suggest that schools have tended to present this view to students and parents.

One of the attractions of NCEA for some HODs has been the capacity to create alternative courses so that students can achieve in the subject and gain a qualification – which is particularly appealing if those students would have achieved very little, if anything, under the former School Certificate examination system. Although none of our HOD and principal interviewees actually stated it directly, there was certainly a sense that having different course options within the one subject met *different types of* student needs. However, just what those different student needs are actually seen to be is a question we need to explore further. It is certainly a crucial matter for not only the HODs and principals, but also for the students (and their parents), who ultimately make the choice to take one or another of the course options.

The impact of timetable constraints

The 2002 report highlighted the timetabling challenges associated with maximising student subject-choice in medium-sized secondary schools (Hipkins and Vaughan, 2002a). The

[29] There are exceptions – *see* Section Seven for examples of such courses that also use achievement standards.

© NZCER

conversations with principals and HODs reported in Section Two attest to the ongoing nature of these concerns for school staff. The factor "it fitted my timetable" was indicated as a reason for choice of English option by 34 percent of Year 11 students and 32 percent of Year 12 students. For 5 percent of these Year 11 students and 4 percent of Year 12 students, this was the only factor chosen. Other students who chose this factor also reported other influences on their choices.

While of less influence than any other factor except the availability of "easy NCEA credits", our interviews with school staff suggested that this level is higher than most would like to see. While there was little difference at Year 11 (traditional-discipline 35 percent; locally-redesigned 28 percent), significantly more of the Year 12 students who chose this factor were taking the traditional-discipline versions of the course (traditional-discipline 27 percent; locally-redesigned/contextually-focused 5 percent). This may be indicative of the relatively low number of available places in contextually-focused courses, which tended to be limited to one, or at the most 2, classes at each year level. On the other hand, it may be that some students read this factor as "this specific *class* (not this option) fitted my timetable", in which case the actual rate of inability to take a chosen option for timetabling reasons could well be lower than that reported here.

Patterns of students' choices in mathematics

The majority of 2003 students selected the traditional-discipline mathematics pathway at both Year 11 and Year 12 in most schools. Compared to English, greater numbers of students were taking different types of mathematics courses, at least in part because more options were available at Year 11. Mathematics becomes optional at Year 12 in all 6 schools and almost a fifth of all the responding 2003 Year 12 students appear to have chosen not to continue with the subject. Somewhat more students were taking mathematics at a different year level than was the case for English. Table 40 summarises students' choices of mathematics options at both year levels.

Table 40 **Percentage of students choosing the various mathematics options**

Year 11 option choices	**% who chose this option**
Traditional-discipline	67
Locally-redesigned	21
Contextually-focused	8
Mathematics at another year level (usually Year 12)	3
No mathematics course	1
Year 12 option choices	**% who chose this option**
Traditional-discipline	59
Contextually-focused	16
Year 11 mathematics option	2
Year 13 mathematics option	4
No mathematics course	19

© NZCER

Figures 10 and 11 show variations in numbers of students taking each type of course in the 6 schools. The majority of 2003 students were enrolled in traditional-discipline options in 5 of the 6 schools. In City Schools A and B, more than 80 percent of the mathematics students were in such courses at both year levels and in Town School E, 97 percent of those who continued to take mathematics at Year 12 were studying in traditional-discipline courses. City School C reverses the pattern, with 60 percent of its Year 11 and 61 percent of its Year 12 mathematics students reporting that they were taking locally-redesigned or contextually-focused mathematics courses.

Figure 10 **Year 11 students' choices of mathematics options in the 6 schools**

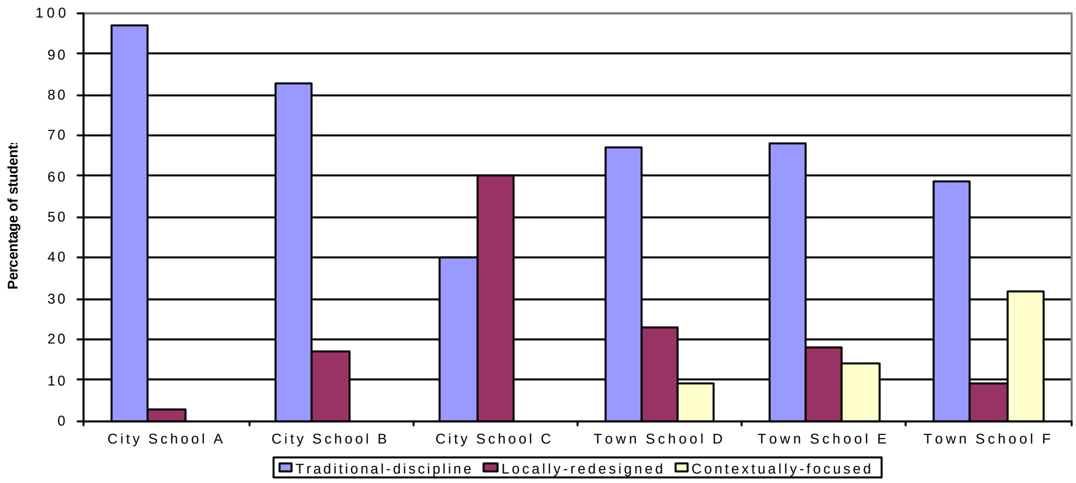
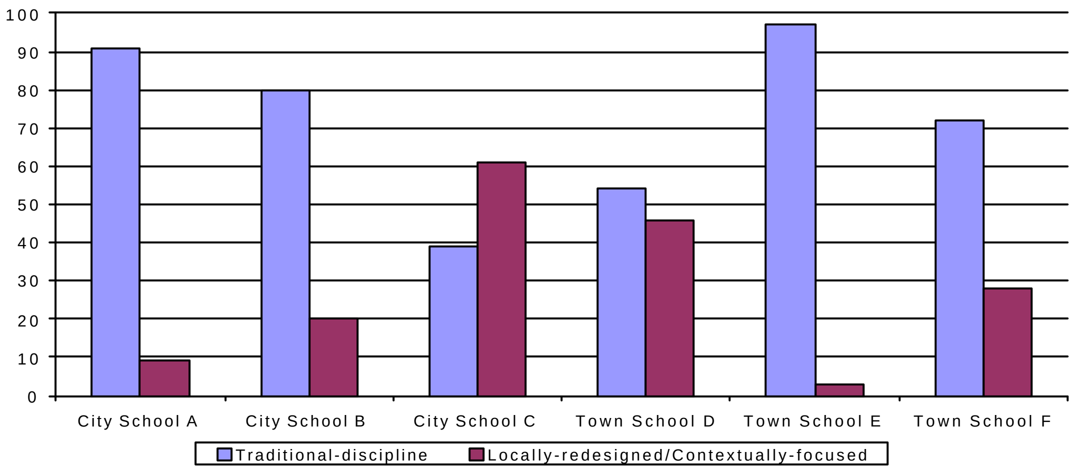


Figure 11 **Year 12 students' choices of mathematics options in the 6 schools**



Although contextually-focused versions of mathematics were offered at Year 11 in 5 of the 6 schools in 2003 (City School B was the exception –*see* Section Seven), only students in the 3 town schools responded that they were studying this type of mathematics course. In Section Two we cautioned that variations in response rates might mean that some types of students did not have their perspectives recorded in the data because they did not complete questionnaires. Since some students are taking both contextually-focused mathematics and English courses (*see* below),

© NZCER

it may be that some of this group simply failed to respond because of the amount of reading required in the long questionnaire.

Factors influencing students' mathematics choices

Tables 41 and 42 summarise the patterns of Year 11 and Year 12 students' responses to the choice factors presented on the questionnaire, with respect to their mathematics option choices. Year 11 students chose an average of 2.5 of the 5 provided factors, with 25 percent choosing one factor and 5 percent choosing all 5 factors. Year 12 students chose an average of 2.6 factors, with 22 percent choosing one factor and 6 percent choosing all 5 factors.

These patterns of responses are very similar to those described for English.

At both year levels:

- Future plans were the factor cited most often.
- The sub-factors of future career, life skills, and future study were selected by between 52 and 74 percent of students.
- Enjoyment and talking to others were the next most frequently selected factors, and were chosen by similar numbers of students.
- The sub-factors for enjoyment were ranked in a similar order, with expectations of challenge and interest the most frequently mentioned sub-factors. Practical aspects and perceptions of easiness were the least often mentioned sub-factors.
- The sub-factors for talking to others were ranked in the same order, with parents mentioned most frequently and teachers second most frequently. Although a greater percentage of Year 12 students mentioned parents as a sub-factor (Year 11 = 76 percent; Year 12 = 48 percent) the differences lessen when expressed as a percentage of the whole cohort (Year 11 = 27 percent; Year 12 = 37 percent).
- "Easy NCEA credits" and "it fitted my timetable" were chosen far less often than the other 3 factors.

© NZCER

Table 41 **Factors influencing Year 11 students' choice of mathematics option**

Future plans	72%
Enjoyment	59%
Talking to others	57%
Timetable	35%
NCEA credits	30%

Future plans:

Career	74%
Life skills	68%
Future study	59%
Travel plans	21%

Enjoyment:

Challenge	67%
Interest	53%
Friends in class	49%
Liking teacher	49%
Being good at it	48%
It's easy	38%
Practical aspects	35%

Talking to others:

Parents	48%
Teachers	38%
Dean	21%
Careers teacher	7%

© NZCER

Table 42 **Factors influencing Year 12 students' choice of mathematics option**

Factor	%	Sub-factor	%
Future plans	82%	Career	77%
		Future study	63%
		Life skills	52%
		Travel plans	13%
Enjoyment	61%	Challenge	70%
		Interest	57%
		Being good at it	50%
		Friends in class	38%
		Liking teacher	38%
		It's easy	28%
		Practical aspects	25%
Talking to others	49%	Parents	76%
		Teachers	44%
		Dean	22%
		Careers teacher	12%
NCEA credits	33%		
Timetable	28%		

© NZCER

Response patterns and course options

Figures 12 and 13 show the relative frequency of responses from students taking traditional-discipline mathematics courses and those taking either locally-redesigned or contextually-focused mathematics courses. Because of the relatively small numbers involved, responses from Year 11 students taking these 2 option types have been collated together for the analysis.

Figure 12 **Influences on the mathematics option choices of Year 11 students**

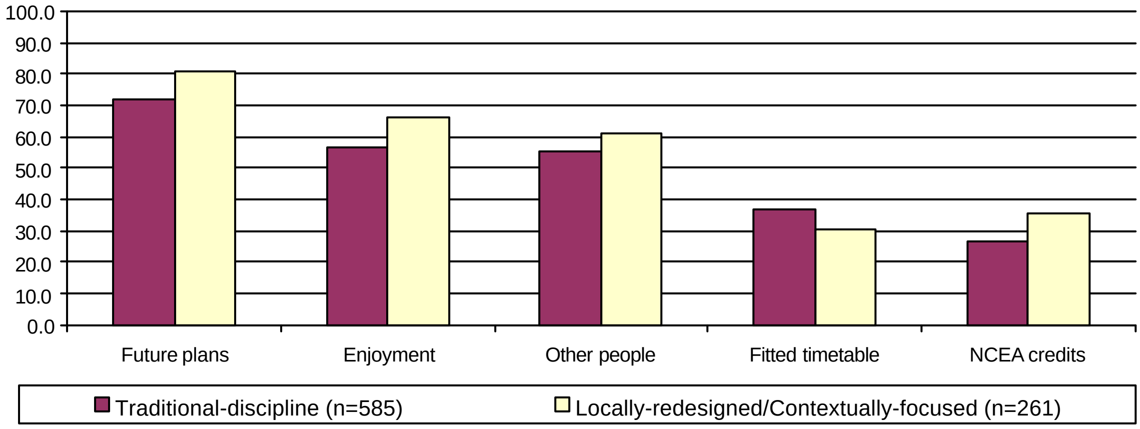
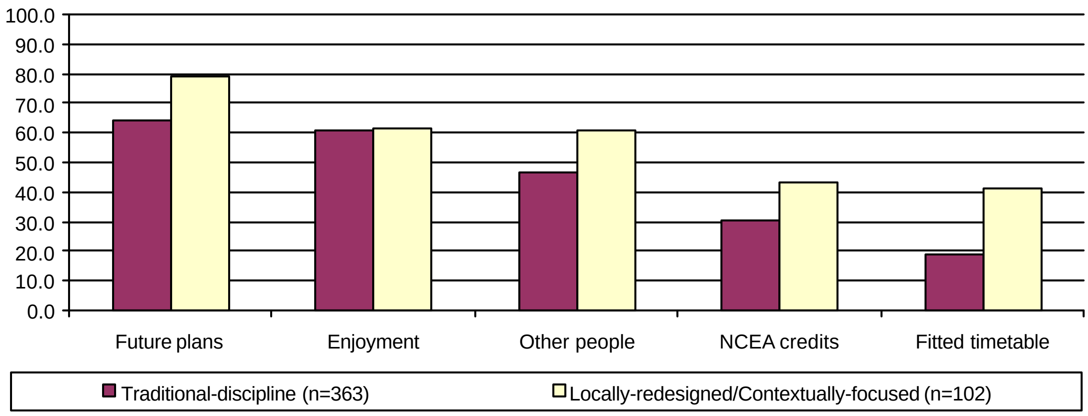


Figure 13 **Influences on the mathematics option choices of Year 12 students**



There were no differences in the patterns of factor responses from Year 11 students taking the various types of mathematics courses. Year 12 students who chose locally-redesigned or contextually-focused courses were more likely than traditional-discipline students to say that other people, gaining easy NCEA credits, or fitting the timetable were factors that influenced their choices.

© NZCER

Links between choice of mathematics option and future plans

As in English, students rated future plans ahead of all other factors that influenced their subject choices.

The overall frequency of this influence increased from 72 percent at Year 11 to 82 percent at Year 12. It seems that those students who continued to choose mathematics once the subject became optional strongly associated this choice with their future plans.

Future study was more likely to be chosen as a choice sub-factor by those students who were taking a traditional-discipline mathematics option at both Years 11 and 12. It may be that this pattern is related to a perception that achievement standards (which are predominantly used to assess traditional-discipline courses in mathematics) are more important for future study than unit standards.

Choosing an enjoyable mathematics option

Expectations of enjoyment were the second highest influence on mathematics options choices at both year levels. Year 11 students who chose locally-redesigned or contextually-focused courses in mathematics were more likely to say they were influenced by enjoyment than were students choosing traditional-discipline options.

Year 11 students who chose enjoyment as a factor also chose an average of 3.4 of the 7 sub-factors, with 20 percent choosing only one sub-factor and 9 percent choosing all 7 sub-factors. At Year 12 students chose an average of 3.1 sub-factors with 21 percent choosing only one sub-factor and 7 percent choosing all 7 sub-factors.

Figures 14 and 15 report patterns of responses to the sub-factors of enjoyment from students taking different types of mathematics options. The expectation that mathematics would be enjoyable because it is challenging was the most frequently chosen sub-factor overall at Year 11. This factor was chosen more often by the Year 11 students taking traditional-discipline courses than by those taking the other 2 types of courses. Just 20 percent of Year 11 students taking traditional-discipline mathematics who indicated that challenge was an influencing factor also indicated that being good at mathematics was an influencing factor.

Traditional-discipline students were also more likely to link enjoyment to expectations that the subject would be interesting and to "being good at" mathematics. Sixty-five percent of Year 11 students taking traditional-discipline mathematics who indicated that interest was an influencing factor also indicated that being good at mathematics was an influencing factor.

© NZCER

Figure 14 **Enjoyment sub-factors that influenced choice of Year 11 mathematics option**

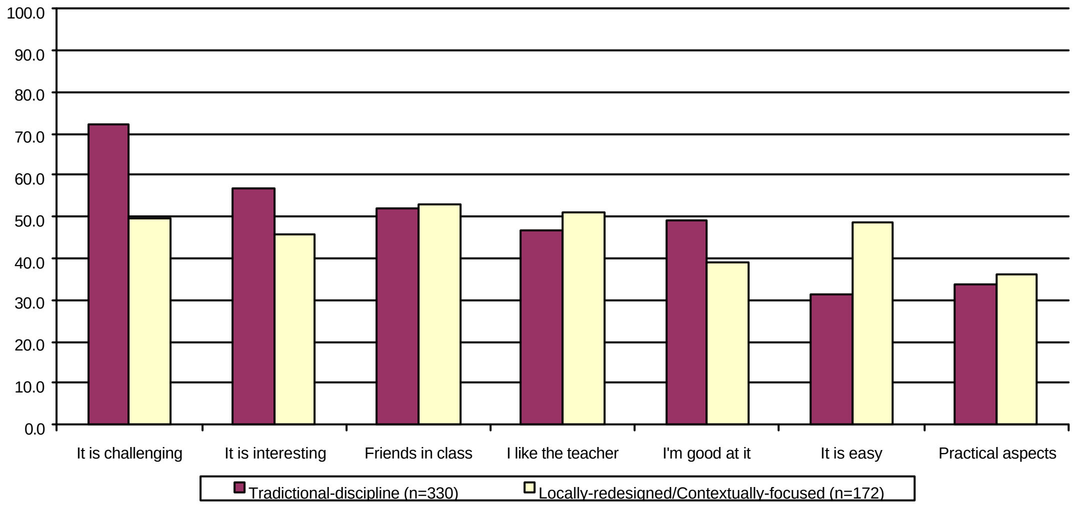
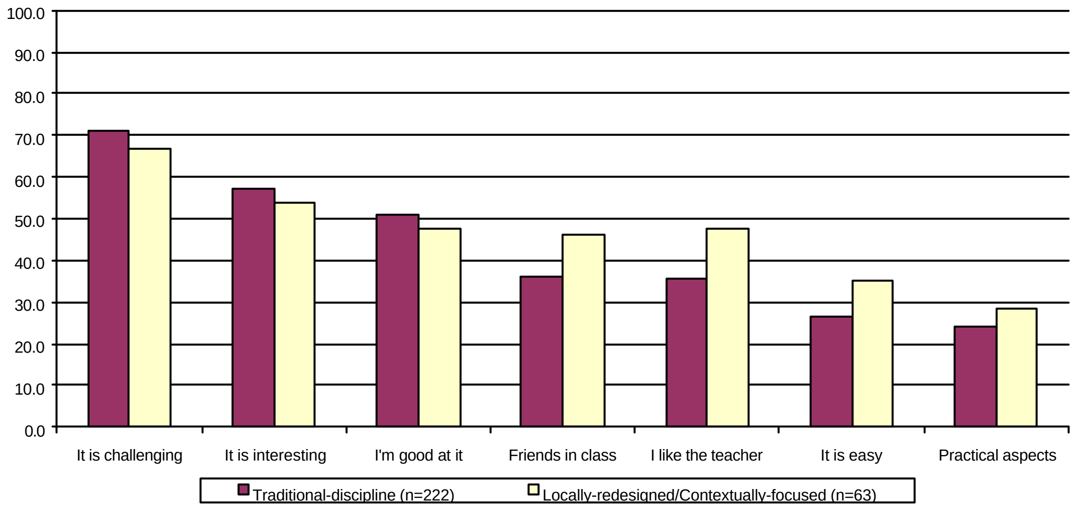


Figure 15 **Enjoyment sub-factors that influenced choice of Year 12 mathematics option**



In contrast, both Year 11 and Year 12 students who chose locally-redesigned or contextually-focused mathematics options with an expectation of enjoyment were more likely to link this to a perception that the course would be easy. Reasons for this difference may be similar to those already suggested for the same pattern in choice of English option. It may also be that students who chose these types of options do not have an interest in the more formalised form of abstract mathematics which predominates and is valued in traditional-discipline courses (Leigh-Lancaster, 2002), despite its lack of applicability in many real-life situations. Students taking locally-redesigned and contextually-focused courses may have actively chosen the more practical learning experiences that are assessed by the types of unit standards typically chosen for these courses.

© NZCER

People who influenced choice of mathematics option

Talking to other people about making options choices was the third highest influence for students in mathematics at both year levels. Year 11 and Year 12 students who chose this factor also chose an average 1.8 of the 5 sub-factors. Fifty percent of Year 11 students chose only one sub-factor and 3 percent chose all 4 sub-factors. Fifty-one percent of Year 12 students chose only one sub-factor and 1 percent chose all 5 sub-factors.

As in English, both Year 11 and Year 12 students said that parents were the people most likely to influence their choice of mathematics option, with teachers the second most influential group. More students reported parents as influences for mathematics than for English choices, especially at Year 12 (Year 11 parents: English, 42 percent; mathematics, 48 percent; Year 12 parents: English, 28 percent; mathematics, 76 percent). The same pattern held for the influence of Year 12 teachers (English, 23 percent; mathematics, 44 percent).

Figures 16 and 17 show differences in perceptions of the influence of different people on the choice of either a traditional-discipline or a locally-redesigned or contextually-focused option.

At Year 12 parents were significantly more likely to influence students choosing the traditional-discipline version of mathematics. There are a number of subtly different possibilities here. Mathematics becomes optional at Year 12. It may be that students thinking about the mathematics options are more likely to have discussed the choice with their parents. Or it may be that parents are more likely to encourage their children to take traditional-discipline rather than contextually-focused mathematics options. Students who are not confident in mathematics (and probably do not achieve well) may choose not to take mathematics at all in Year 12. If this happens, it is possible that parents might encourage the students who do wish to take mathematics to take the traditional-discipline version.

By contrast, deans were more likely to influence the choices of the Year 11 students who were taking contextually-focused mathematics options. As in English, it could be that students who are seen as "more suited" to the alternative options are required to talk to their dean about their option choice. The difference was no longer significant at Year 12.

© NZCER

Figure 16 **Year 11 talking to other people influences on mathematics option choice**

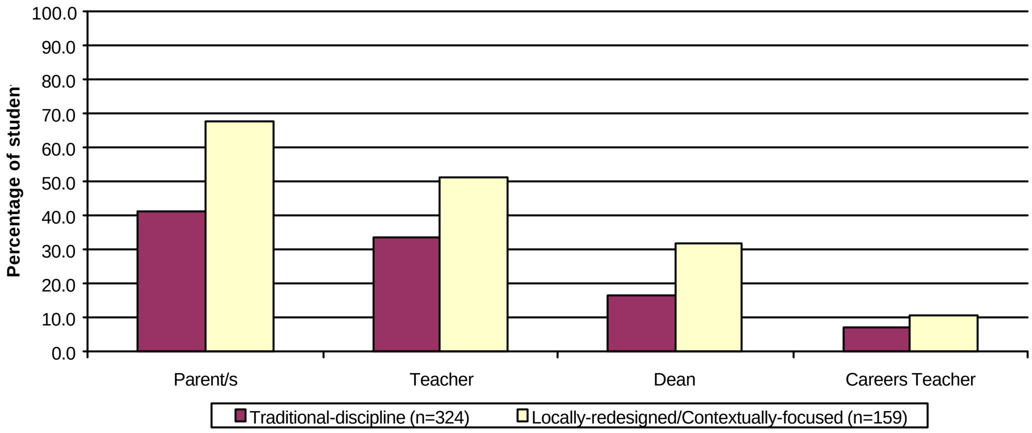
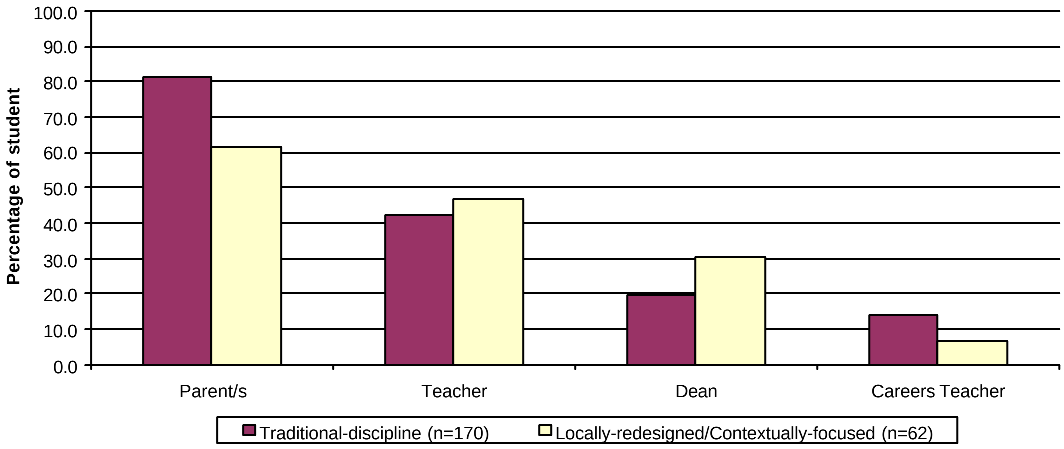


Figure 17 **Year 12 talking to other people influences on mathematics option choice**



"Easy NCEA credits" and choice of mathematics option

As in English, Year 11 students who chose either locally-redesigned or contextually-focused options were also more likely to choose the factor of easy NCEA credits than were the students who chose the traditional-discipline option (27 percent traditional-discipline; 48 percent contextually-focused or locally-redesigned). A similar relationship existed for Year 12 students (31 percent traditional-discipline; 43 percent contextually-focused or locally-redesigned). We found an association between choosing locally-redesigned or contextually-focused options of mathematics for the chance to gain easy credits and choosing these courses because they are likely to be easy (as a sub-factor of enjoyment).

© NZCER

The impact of timetable constraints

Similar numbers of students chose "it fitted my timetable" as a choice factor in mathematics to those who chose this for English (Year 11 English, 34 percent; mathematics, 35 percent; Year 12 English, 32 percent; mathematics, 28 percent).

However, at Year 12 this factor was chosen by more students who were taking contextually-focused mathematics courses than by those taking traditional-discipline courses. There are more subject choices at Year 12 in total than at Year 11. Was this a way to at least keep a mathematics option open when there were too many subjects to fit in? (The choice combinations that are possible are influenced by how subjects are clustered on timetable lines – *see* the 2002 report (Hipkins and Vaughan, 2002a).)

Choosing combinations of English and mathematics

In 2003, more Year 11 students were enrolled in locally-redesigned or contextually-focused mathematics options (29 percent) than in the equivalent English (11 percent) or science (9 percent) options. Thirty-three percent of the Year 11 students who took a locally-redesigned or contextually-focused option in mathematics took similar types of options in English or science.

This association between locally-redesigned or contextually-focused options in the core subjects continues at Year 12, although the percentages of the whole year level cohort doing so were smaller. At this year level,16 percent of the 2003 students were taking one of these options in mathematics, 16 percent were doing so in English, and .5 percent were taking a contextually-focused option in the Year 12 sciences.

Seventy-eight percent of the 2003 Year 12 students who chose a contextually-focused English option were also taking this type of mathematics option.

In the initial *Learning Curves* report we outlined the manner in which all 6 schools were re-organising their core compulsory subjects into courses based on achievement and unit standards in order to meet the varying learning needs of different students. We also made the point that, in at least 5 of the 6 schools, meeting student needs in this way appeared to be bringing about a form of de facto streaming according to ability levels (Hipkins and Vaughan, 2002a). The data reported here suggest a streaming effect for a small number of students – at least with respect to their compulsory subjects. Section Twelve demonstrates that this effect also extended to some optional subjects, but other optional subjects appear to have been chosen by students from across the range of learning needs.

© NZCER

Students' satisfaction with their option choices

The questionnaire asked students to indicate the extent of their happiness with each of their subject choices on a 5-point Likert scale. Patterns of responses for mathematics and English, at Years 11 and 12, are shown in the figures that follow. Students were also asked to use a second copy of the Likert scale to indicate how happy they thought their parents were with each subject choice.

Figures 18–21 juxtapose students' own responses showing their overall happiness with their mathematics course choices with their perceptions of their parents' happiness with these choices. Figures 22–25 show the same pairings of responses for English choices.

Generally, students were happy with their choice of option in Years 11 and 12. There is a strong similarity between the patterns of responses for each pair of graphs. It seems that if students are happy with their option choices, they think their parents are, too. There was no significant difference in satisfaction between students who chose traditional-discipline and the locally-redesigned or contextually-focused options in either subject when school effects are taken into account.

This general satisfaction with mathematics and English choices is borne out by the scant numbers of students wanting to take another, different, option in mathematics or English. Less than 1 percent of Year 11 students in mathematics and in English wanted to take another, different option for the subject. Just 2 percent of Year 12 students would have preferred another option in English or mathematics.

© NZCER

Figure 18 **Year 11 student happiness with option choice in mathematics**

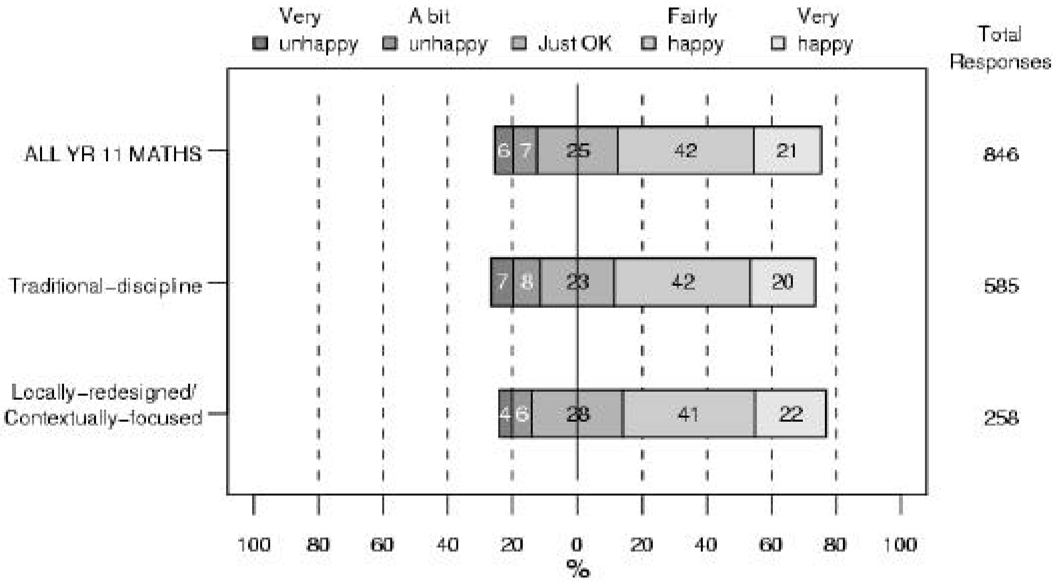


Figure 19 **Year 11 student perception of parent happiness with option choice in mathematics**

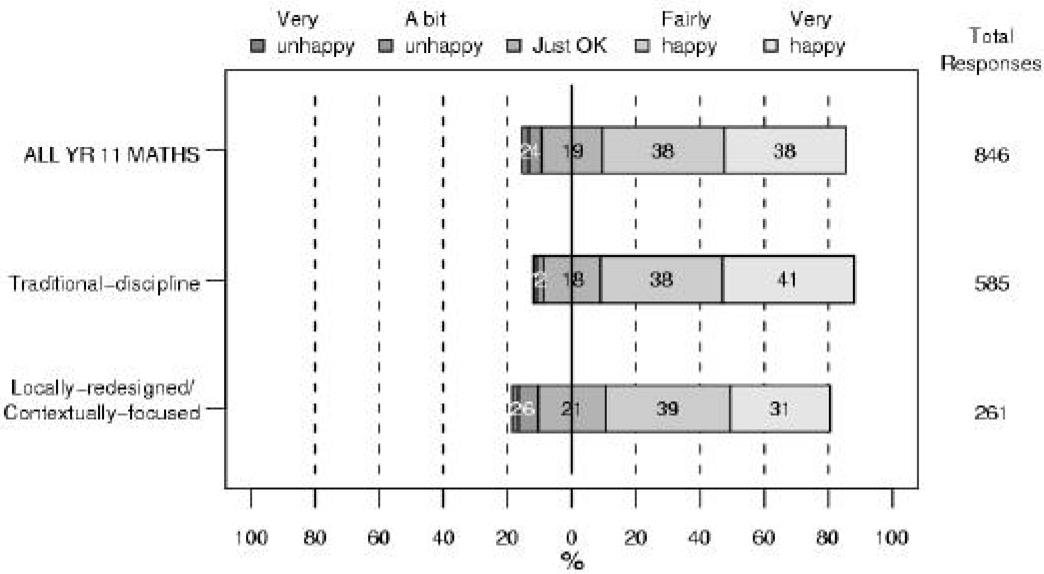


Figure 20 **Year 12 student happiness with option choice in mathematics**

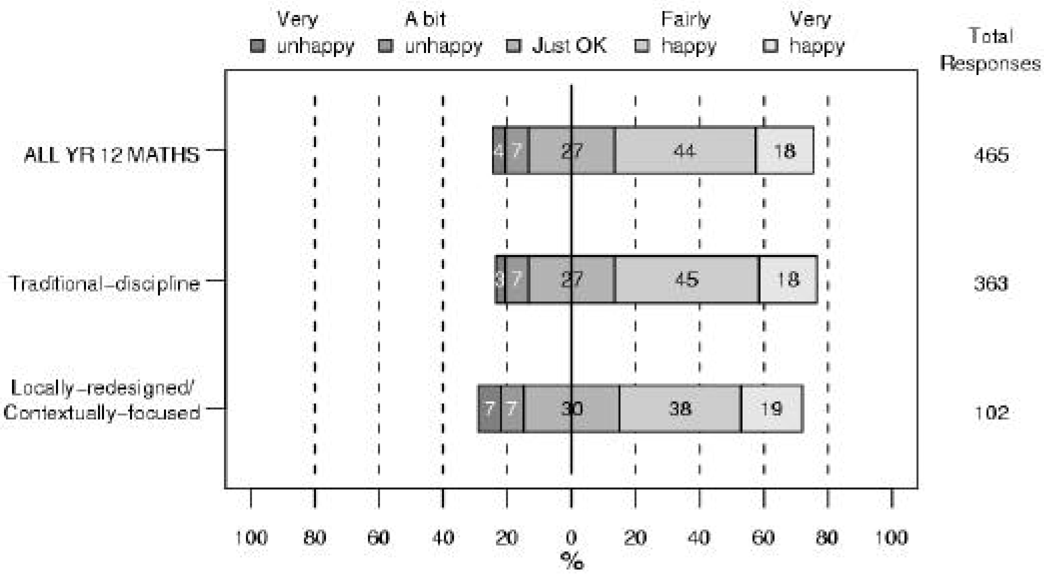
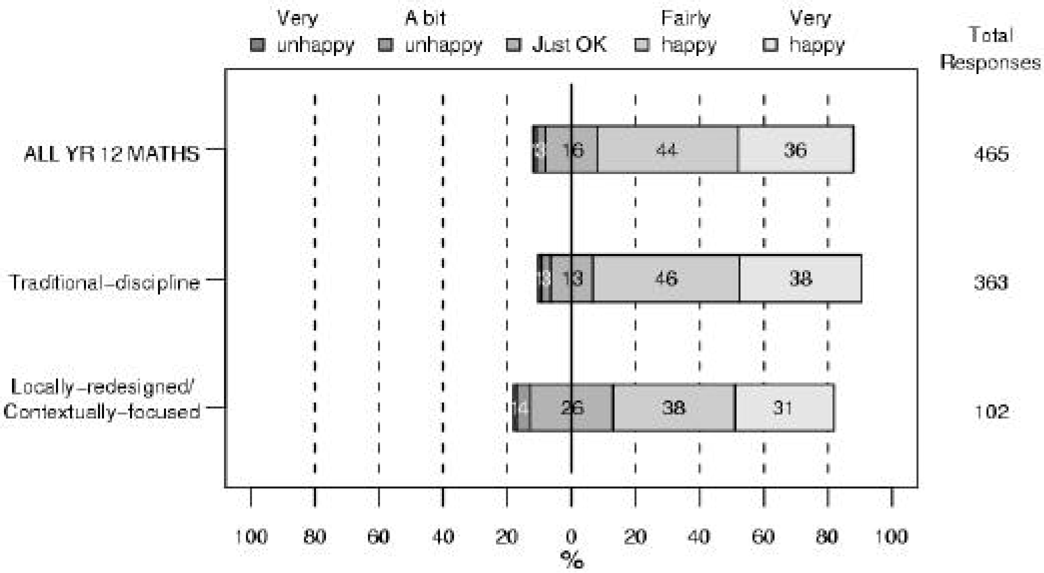


Figure 21 **Year 12 student perception of parent happiness with option choice in mathematics**



© NZCER

Figure 22 **Year 11 student happiness with option choice in English**

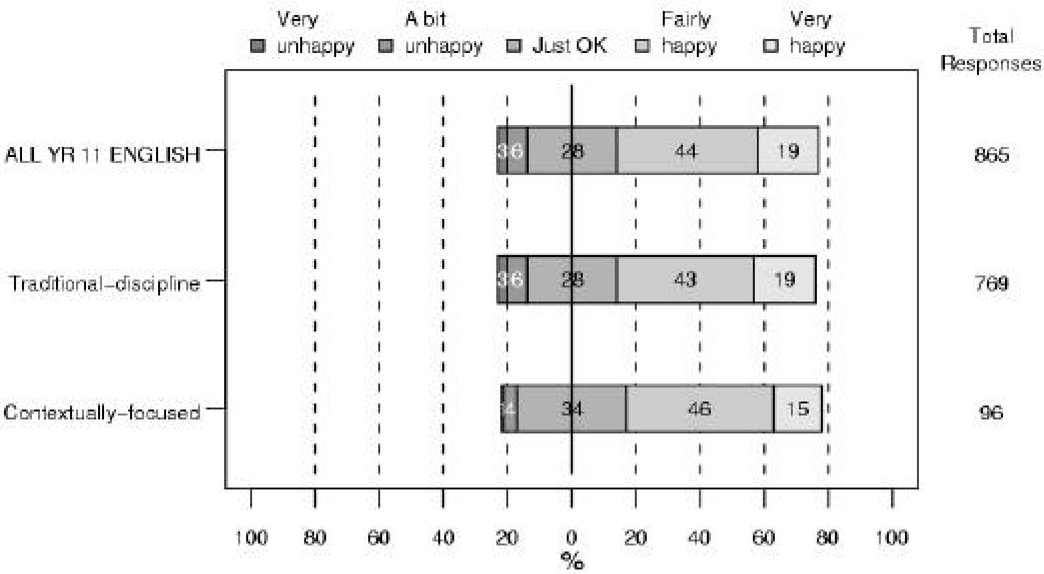
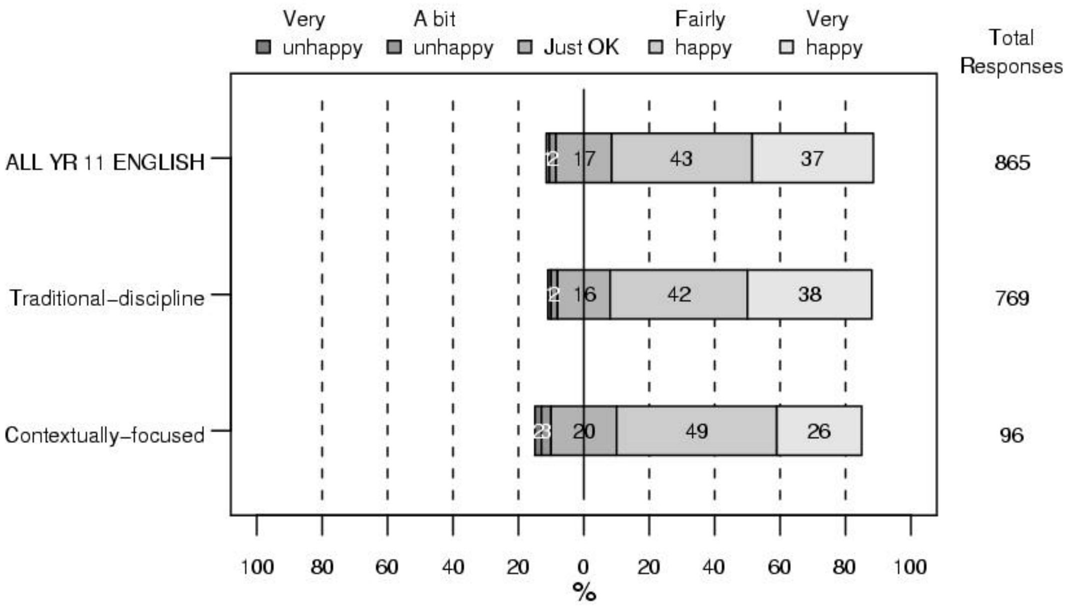


Figure 23 **Year 11 student perception of parent happiness with option choice in English**



© NZCER

Figure 24 **Year 12 student happiness with option choice in English**

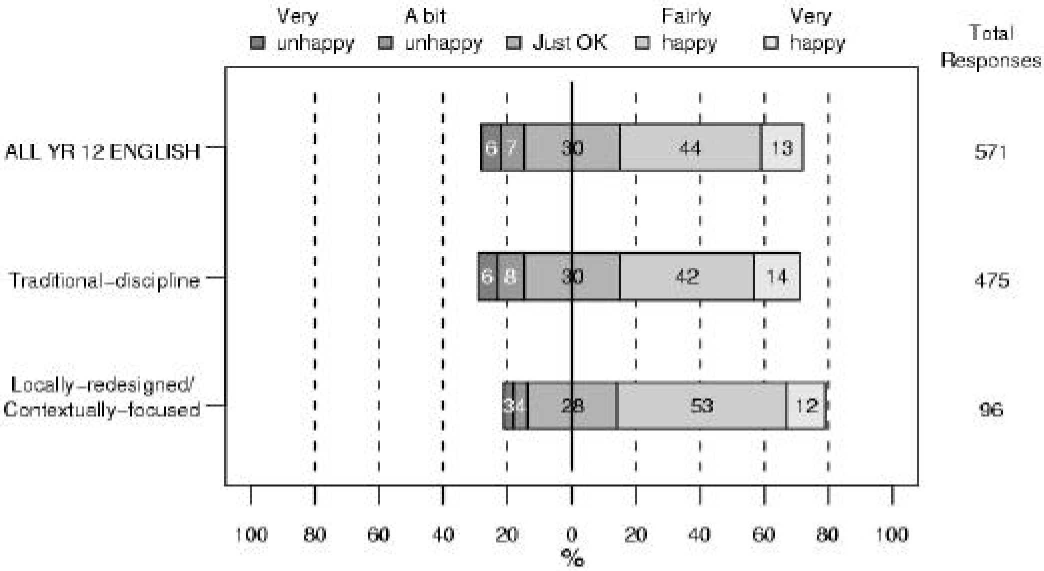
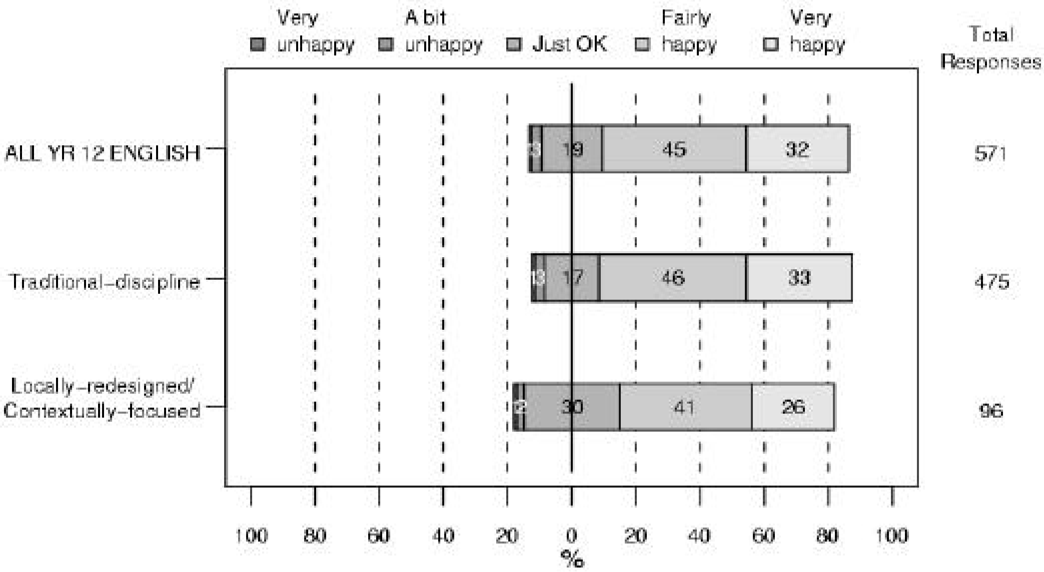


Figure 25 **Year 12 student perception of parent happiness with option choice in English**



Students' ideas about changes in mathematics and English courses

If students said they were unhappy with a subject choice, they were asked to choose factors that would make them happier from a checklist provided. These factors were:

- changing to another subject altogether;
- changing to another teacher;

© NZCER

- changing classes to be with my friends;
- doing more practical (hands-on) work;
- doing less practical (hands-on) work;
- having more interesting learning activities;
- having less assessment pressure;
- getting more support from teachers for my learning in class; and
- having more obvious links to everyday things that interest me.

Students did not respond to this question in the way we had anticipated. Some indicated changes they would like to see, regardless of whether they had first said they were unhappy with their option choices. Thirteen percent of Year 11 students and 11 percent of Year 12 students indicated they were unhappy with their mathematics option choices but many more (56 percent at Year 11, 53 percent at Year 12) responded to the question about changes. Three percent of Year 11 students and 13 percent of Year 12 students indicated they were unhappy with their English option choices but 57 percent of Year 11 and 59 percent of Year 12 students responded to the question about changes.

Table 43 summarises responses made by 20 percent or more of students to show the types of changes most commonly indicated.

Table 43 **Changes 20 percent or more Years 11 and 12 students would like to see in mathematics and English courses**

Change factor	Yr.11 English n=897	Yr.11 mathematics n=905	Yr.12 English n=584	Yr.12 mathematics n=500
More interesting learning activities	32	27	31	26
Less assessment pressure	29	24	26	22
More learning support from teacher		21		
Change to another teacher		20		

A change to more interesting learning activities was the most frequently chosen factor for mathematics and English, at each year level. There were no differences in response rates between students taking traditional-discipline and locally-redesigned or contextually-focused options in the 2 subjects at Year 11. However, more Year 12 students who were taking locally-redesigned or contextually-focused courses in either subject wanted a change to more interesting learning activities than did students taking the traditional-discipline options in English and mathematics.

About a quarter of the students wanted a reduction in assessment pressure, providing support for the opinions of teachers who thought there was now too much emphasis on assessment. There was no difference between students taking traditional-discipline and locally-redesigned or contextually-focused Year 11 or Year 12 mathematics courses. However, 31 percent of students taking the traditional-discipline option of Year 11 English wanted less assessment pressure compared to 17 percent of students taking the contextually-focused versions. At Year 12 there was no difference between students taking the various English options.

© NZCER

Some students wished for changes in the nature of their relationship with their teacher. A fifth of all Year 11 students felt that they needed more support from their mathematics teacher or wanted to change their mathematics teacher altogether. For both of these teacher-change factors, more of these students were in traditional-discipline options (23 percent more teacher support; 23 percent changing teacher) than in the locally-redesigned (18 percent more teacher support; 14 percent changing teacher) or contextually-focused (7 percent more teacher support; 10 percent changing teacher) options. Fewer students said they wanted changes in the nature of their relationship with their English teachers (i.e. less than 20 percent).

© NZCER

© NZCER

Section Eleven

Choosing sciences

Introduction

At Year 11, science is a compulsory subject in 5 of the 6 *Learning Curves* schools. City School C is the exception. Section Three outlines the nature of the traditional-discipline and contextually-focused options offered at Year 11. Four schools also offer horticulture at this level, with one school combining horticulture and agriculture into a single subject. Town School D offers Year 11 biology, which can be chosen as an alternative to the other science courses.

The nature of the choices to be made in the sciences changes at Year 12 when all science choices are optional and students may be taking more than one science subject. The 3 science subjects offered in all 6 schools are structured as traditional-discipline options (biology, chemistry, and physics). Four schools also offer contextually-focused options including agriculture/horticulture-focused subjects (4 schools) and electronics (2 schools). Town School E offers more such science subjects than any of the other schools.

Key findings for this section

At Year 11 science was compulsory in 5 of the 6 schools and was being studied by 84 percent of the 2003 Year 11 cohort, most of whom were taking a traditional-discipline version.

Just over half of the 2003 Year 12 cohort were studying a science subject and 59 percent of this group was taking one science only. Others were taking 2 or more of the offered sciences in combination. Most Year 12 science students were taking traditional-discipline sciences – biology, chemistry, and physics.

Expectation that the chosen science option would be enjoyable was identified as an influencing factor by 61 percent of Year 11 students and between 73 percent (biology) and 82 percent (chemistry) of Year 12 students. Challenge, interest, and practical aspects were the most frequently selected sub-factors of enjoyment for all science subjects at both year levels.

Nearly 60 percent of Year 11 science students, and between 69 percent (biology) and 80 percent (physics) of Year 12 students said their choice of science option was influenced by future plans. Future study, and future career were chosen as influencing sub-factors by about half of

© NZCER

each responding group. The life skills sub-factor was seen as having influenced Year 11 choices but was not as highly rated for the Year 12 sciences.

As in English and mathematics, parents were perceived to be more influential than teachers or deans in students' subject choices. Year 11 students taking an alternative version of science were slightly happier than those taking an academic version. Generally, if students were happy with their science choices, they appeared to think their parents were happy, too.

About a quarter of Year 12 biology and physics students and nearly a third of Year 11 students said they would like more interesting learning activities in their science subjects. A similar number of Year 11 students also said that their science would be better if they did more practical work, and a quarter of them wanted less assessment pressure. Neither of these registered as changes students wanted in the Year 12 sciences.

Patterns of students' choices in science

Table 44 on the next page summarises student enrolment patterns in these various options. Most Year 11 student respondents (84 percent) are participating in at least one science option in 2003, as would be expected since science is compulsory in 5 of the 6 schools. Within this group, just 6 percent are taking more than one option in science. The most popular combination of science subjects is an academic version of science with horticulture. This combination is being taken by 22 students. Because so few students are taking more than one science subject at Year 11, we have analysed the questionnaire data on the basis of one science subject per student – the traditional-discipline science where this was being taken or a contextually-focused science subject. This allowed for some comparisons to be made with Year 11 mathematics and English.

The 3 Year 12 subjects with the highest enrolment levels are the traditional-disciplines: biology (43 percent), chemistry (42 percent), and physics (41 percent). However, this finding largely reflects the fact that these subjects are offered by all 6 schools. All other science subjects, including Year 11 science options, have been chosen by less than 10 percent of the Year 12 students. Because they are the most commonly taken subjects (82 percent of all students enrolled in a science subject take at least one of these) the analysis that follows focuses on biology, chemistry, and physics choices.

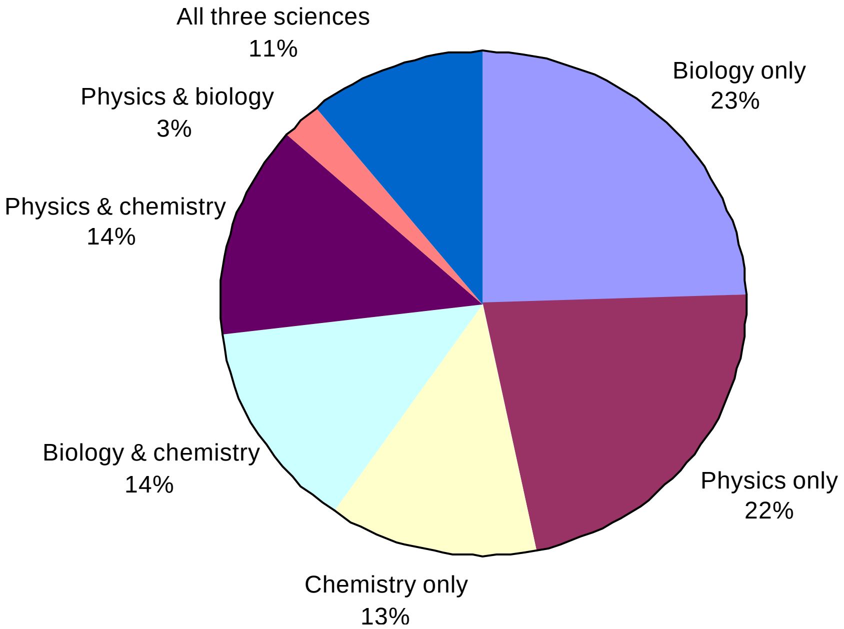
© NZCER

Table 44 **Percentage of students choosing the various science options**

Year 11 option choices	**% who chose this option**
Traditional-discipline	72
Contextually-focused	9
Horticulture only	4
Science at another year level	1
Biology only	1
No science	13
Year 12 option choices	**% who chose this option**
Biology	43
Chemistry	42
Physics	41
Agriculture/horticulture	5
Horticulture	4
Year 12 science	3
Year 11 science	3
Agriculture	2
Year 11 biology	.5
Year 11 horticulture	.5
No science option chosen	46

Totals for Year 12 add to more than 100 percent because some students have chosen 2 or more science options. These patterns are shown in Figure 26.

Figure 26 **How Year 12 students are choosing between biology, physics, and chemistry**



Seventy percent or more of the students taking at least one science in Year 12 were also taking traditional-discipline options in mathematics and English (biology, 70 percent; chemistry, 80

© NZCER

percent; physics, 80 percent). Just 4 students taking chemistry or physics, and only 15 students taking biology, were also taking contextually-focused mathematics.

The relationship between choice of traditional science disciplines and traditional-discipline options in English and mathematics is not surprising, given the prerequisites in each of the schools. Three of the schools (City School B, Town School D,and Town School E) require students to have gained a certain number of credits in mathematics, as well as having achieved well in Year 11 science (*see* Section Seven). City Schools B and E require specific credits (in algebra) for entry into physics, demonstrating a perceived link between ability to achieve in mathematics and ability to achieve in physics.

Factors influencing students' science choices

Responses that identified key influences on their choice of science option were made by most Year 11 students who completed a questionnaire (88 percent). Table 45 on the next page summarises these students' perceptions of the factors that influenced their choice of science option. Because some students were taking more than one Year 12 science it is not possible to present a single table overview summary for this year level.

© NZCER

Table 45 **Factors influencing Year 11 students' choice of science option**

Science Year 11

Enjoyment	61%

Interest	75%
Challenge	65%
Practical aspects	59%
Friends in class	47%
Liking teacher	42%
Being good at it	36%
It's easy	24%

Future plans	59%

Career	62%
Life skills	61%
Future study	53%
Travel plans	13%

Talking to Others	48%

Parents	48%
Teachers	36%
Dean	17%
Someone else	11%
Careers teacher	6%

Timetable	36%
NCEA credits	26%

© NZCER

Expectation of enjoyment is the highest overall rating influence on students' choice of a science option at Year 11 (61 percent) closely followed by future plans (59 percent). Other people were also seen as somewhat influential (48 percent). Making choices that fitted the timetable (36 percent) or that might be expected to yield easy NCEA credits (26 percent) were cited least often. This broad pattern of responses was also recorded for the 3 main Year 12 disciplines, as Figure 28 shows, and is very similar to the pattern of responses recorded for both English and mathematics.

At Year 11 there are significant differences in the frequency with which 3 of the 5 factors were mentioned by students choosing traditional-discipline science courses and those choosing contextually-focused courses. It was not possible to carry out chi-square tests at Year 12 because some students were taking several sciences and response cells were not mutually exclusive. Overall response patterns are shown in Figures 27 and 28.

Figure 27 **Year 11 influences on science option choice**

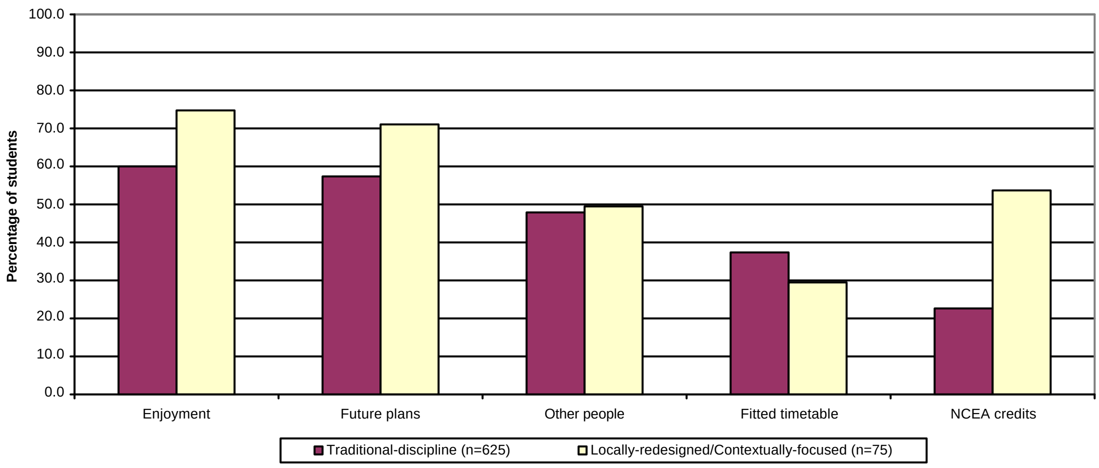
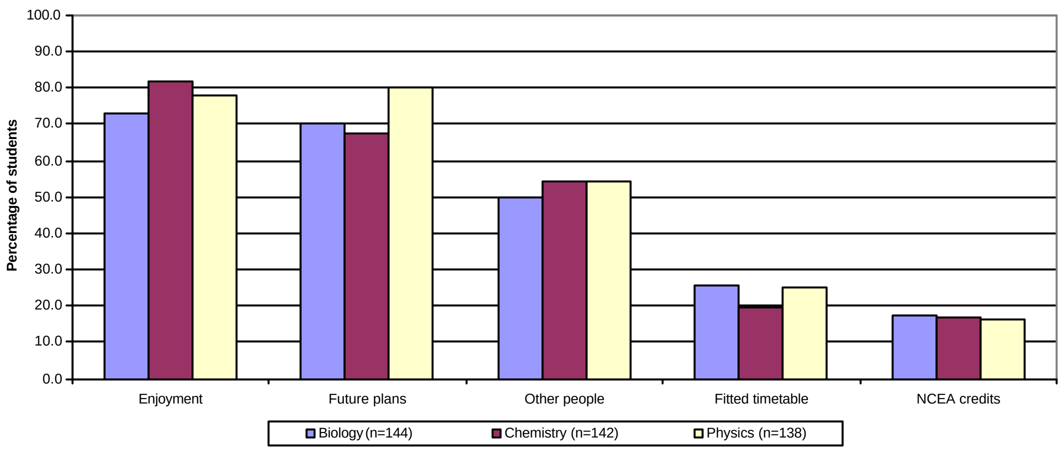


Figure 28 **Year 12 influences on science option choice**



© NZCER

Choosing an enjoyable science option

The factor "I expected to enjoy it" was chosen more often by students who chose contextually-focused science courses at Year 11 (75 percent contextually-focused and 61 percent traditional-discipline). At Year 12 there appeared to be little difference in students' perceptions that this factor influenced their choice of biology, chemistry or physics.

Fifteen percent of Year 11 students who selected this factor also selected at least one sub-factor of enjoyment. The pattern of these responses is shown in Figure 29 below.

Expectations that science would be interesting and challenging was cited as a sub-factor of enjoyment by close to half of all Year 11 students, regardless of the type of science option they chose. Enjoyment of the practical aspects of science was a greater influence on students' choices (36 percent) than it was for either mathematics or English (both 21 percent). There was a relationship between choosing science expecting to enjoy the practical aspects of it and choosing science for interest. It is possible that the practical aspects of science may make science more interesting to students, or that an interest in science may lead students to make more "everyday" connections with the practical knowledge of science.

Figure 29 **Year 11 influences of enjoyment on science option choice**

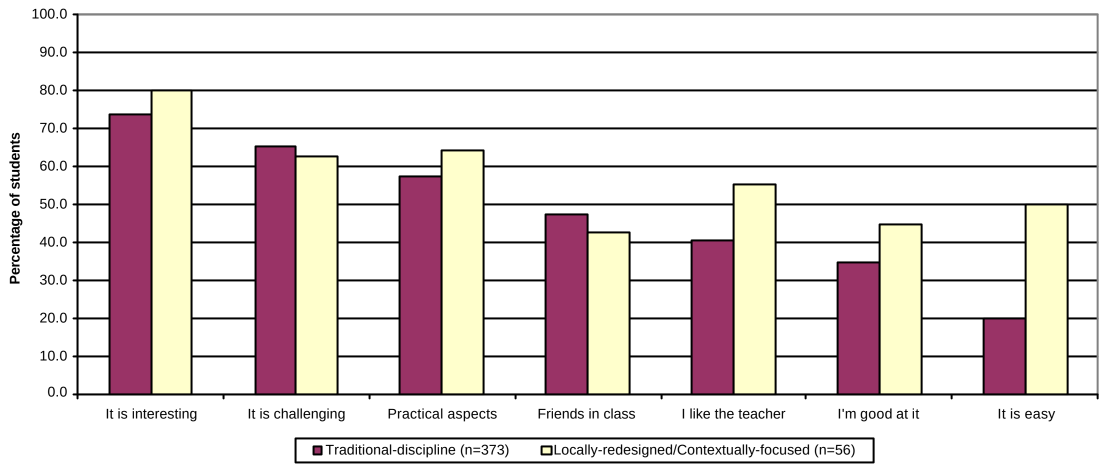


Figure 30 shows responses to the enjoyment sub-factors for each of the Year 12 science disciplines.

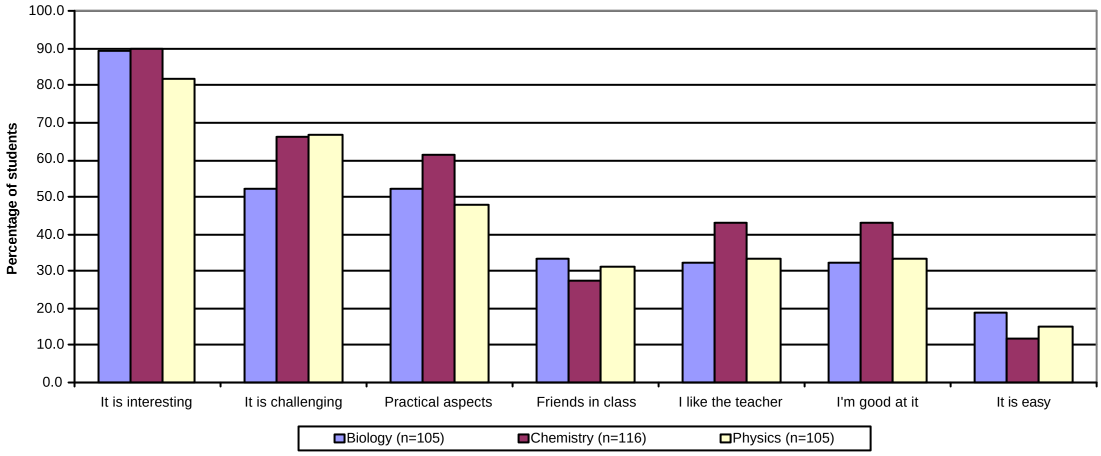
Expectations that their chosen science discipline would be interesting (biology = 90 percent; chemistry = 90 percent, physics = 82 percent) were also the most frequently mentioned sub-factor of enjoyment at Year 12. Challenge continued to be a popular sub-factor choice. Practical aspects of science rated as the third most often mentioned factor.

As in both English and mathematics, Year 11 students who chose contextually-focused science options were more likely to link their choices to expectations that their course would be easy, although this pattern did not hold at Year 12. As in English, they were also more likely to link expectations of enjoyment to their liking of the teacher. By contrast, the perception that science

© NZCER

subjects are easy had the least influence of all the enjoyment sub-factors on students' choice of Year 12 science courses. At Year 12, somewhat more chemistry than biology or physics students reported being good at the subject, practical aspects, and liking the teacher as influencing factors.

Figure 30 **Year 12 influences of enjoyment on science option choice**



Thinking ahead – choice of science options in the light of future plans

Fifty-nine percent of Year 11 students linked their choice of science option to their future plans. Forty-five percent of students who responded to this factor also gave at least one sub-factor response. The sub-factors of future career, life skills, and future study were all selected as influential by a third of the Year 11 cohort.

Figure 31 shows that this factor was chosen significantly more often by students taking traditional-discipline science courses than students taking contextually-focused courses. Unlike the pattern reported for mathematics and English, there was no significant difference in the impact of future study on choice of science options. However, the life skills sub-factor showed a small but statistically significant difference of responses rate between students choosing traditional-discipline and contextually-focused science options. Perhaps unsurprisingly, consideration of the potential to develop useful life skills while learning science appears to have influenced more students who have chosen the contextually-focused courses – the courses that more explicitly make links to contexts of everyday life or the world of future work.

© NZCER

Figure 31 **Year 11 influences of future plans on science option choice**

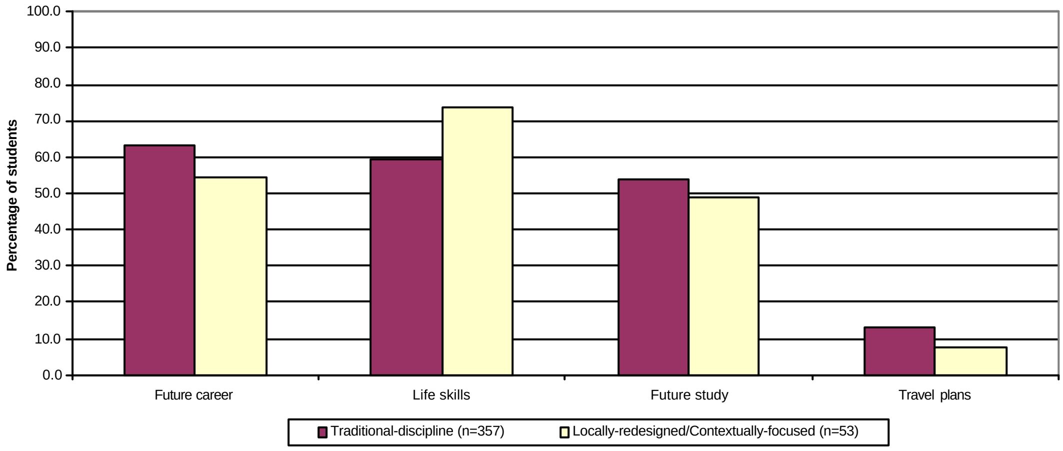
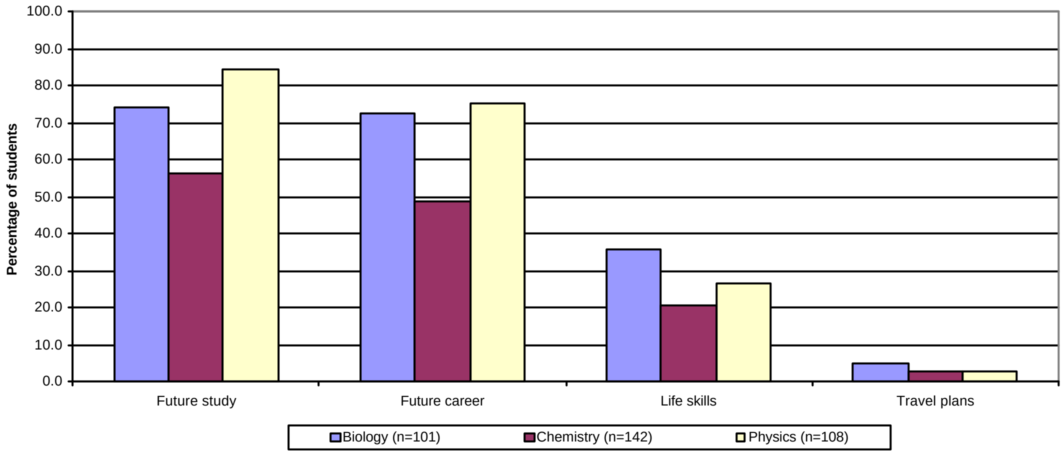


Figure 32 **Year 12 influences of future plans on science option choice**



At Year 12, the sub-factors of study and future career were the most frequently reported sub-factors of future plans category. More biology and physics students said they were influenced by consideration of future study and career than did those who have chosen chemistry. Travel plans are the least influential factor for student choices in the traditional science disciplines. They are cited by less than 10 percent of students across the 3 sciences.

The influence of others on choice of science options

Of the 48 percent of Year 11 students who said they had been influenced by other people, parents (48 percent) rated ahead of teachers (36 percent), deans (17 percent), someone else (11 percent), and careers teachers (6 percent), with no significant differences in patterns of influence for students choosing traditional-discipline or contextually-focused courses. This contrasts with the findings for mathematics and English, where students taking non-traditional versions of each subject were more likely to have been influenced by their parents or by the dean. It may be that parents are less concerned about choice of science option than about choices in what may be seen

© NZCER

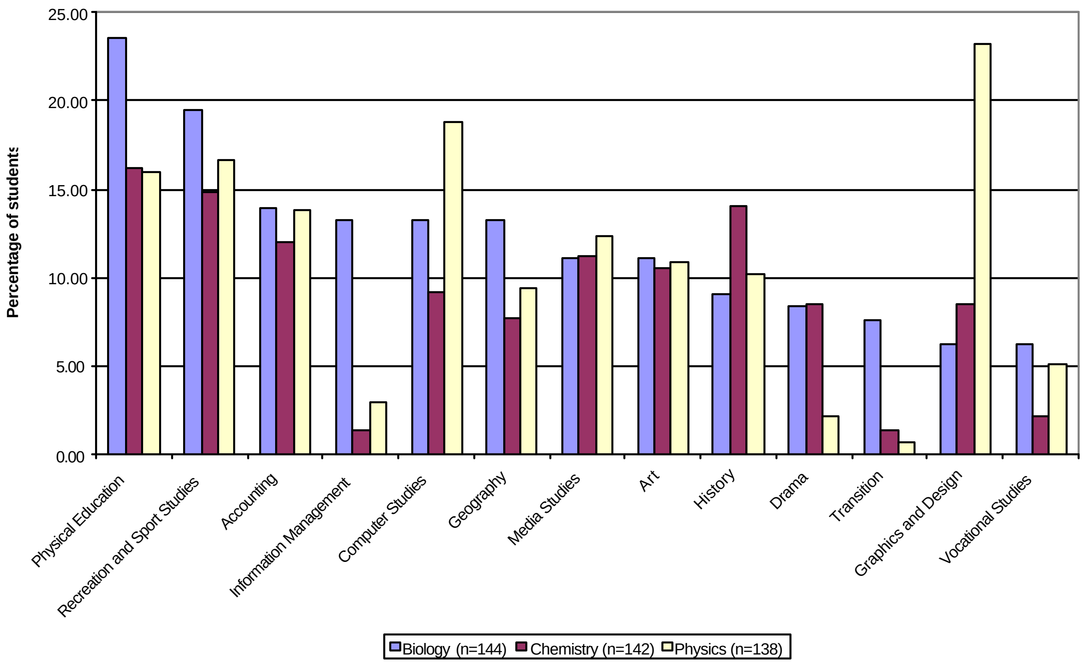
as the "core" subjects assumed to underpin learning success at school generally – English and mathematics. It may be that schools are less concerned about these choices as well, with the deans leaving the role of providing advice to science teachers.

Patterns of responses for Year 12 students were similar. Parents were also the people most likely to have influenced Year 12 science option choices in all the 3 disciplines (biology, 61 percent; chemistry, 68 percent; physics, 71 percent). Teachers were next most likely to have influenced choices (biology, 40 percent; chemistry, 35 percent; physics, 26 percent). Careers teachers and deans continue to a have minimal influence on student choice for the Year 12 traditional science disciplines.

Fitting sciences into the timetable

The factor "it fitted my timetable" was indicated as a reason for choice of science option by 36 percent of Year 11 students. At Year 12 responses rates ranged from 20 percent (chemistry) to 25 percent (biology). With more sciences being offered at the Year 12, we investigated how students were balancing these choices with other options. Figure 33 shows how students mixed their science options with optional subjects. Students taking biology tended to take subjects in the health and physical education curriculum[30] and information management. Physics students often chose graphics and design and computer studies and were least likely to choose drama or transition subjects. More chemistry students also took history and they were least likely to choose information management.

Figure 33 **Other optional subjects taken by Year 12 science students**



© NZCER

The influence of "easy NCEA credits" on science choices

Section Ten reported that students taking contextually-focused mathematics were also more likely to be taking contextually-focused English, and that the possibility of gaining "easy NCEA credits" had an influence on students' choice of these courses. We found a similar pattern in the responses of Year 11 students who are taking contextually-focused science. More than half of these students (53 percent) said they had been influenced by the belief that they could get "easy NCEA credits". By contrast, 26 percent of students taking traditional-discipline science reported "easy NCEA credits" as an influence on their science option choice. There was no relationship between the perception that contextually-focused science would lead to "easy NCEA credits" and the perception that it would be "easy".

Year 12 students taking biology, chemistry, and/or physics reported NCEA credits as being the lowest overall influence on their subject choice, with no response rates over 18 percent.

Students' satisfaction with their science option choices

Figures 34-37 juxtapose students' responses showing their overall happiness with their science course choices with their perceptions of their parents' happiness with these choices.

Overall, students indicated that they were happy with their choice of science option. Figure 34 shows that 76 percent of students who chose Year 11 contextually-focused science options were fairly happy or very happy with this choice. Fewer students (51 percent) were as happy with their choice of a traditional-discipline science option. The collective differences are greater than for either English or mathematics but are not sustained when patterns for individual schools are taken into account.

Most students taking contextually-focused Year 11 science courses thought their parents were happy or very happy with this choice (81 percent) – a slightly higher response rate than they chose for themselves. Interestingly, 70 percent of traditional-discipline students thought their parents were happy or very happy with their choice of science option – a considerably higher response rate than these students chose for themselves. Students taking either Year 11 traditional-discipline science or contextually-focused science who indicated that their parents influenced their choice were more likely to also indicate that their parents were happy with their choice. This combination suggests some students were taking traditional-discipline options because their parents wished them to do so, not because this is what they wanted.

Overall, Year 12 students were happy with their science subject choices. There were very minor differences in their own response patterns for the 3 science disciplines. As for traditional-discipline science at Year 11, somewhat more students thought their parents were very happy or

[30] Physical education and health was compulsory for Year 12 students in one of the schools.

© NZCER

fairly happy with their choice of all 3 Year 12 traditional-disciplines (biology, chemistry, physics) than they were themselves.

Figure 34 **Year 11 student happiness with option choice in science**

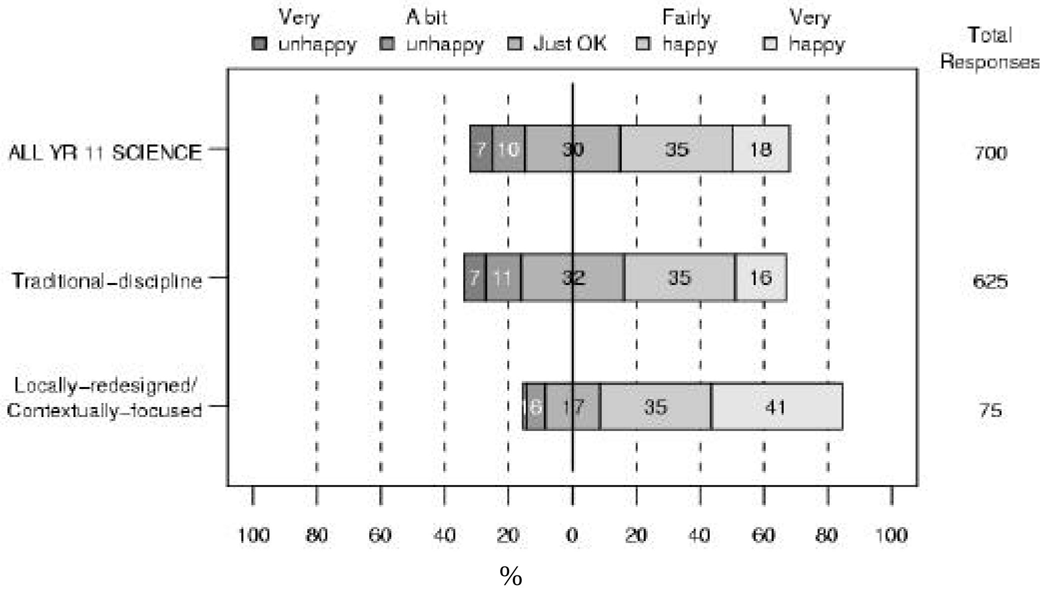
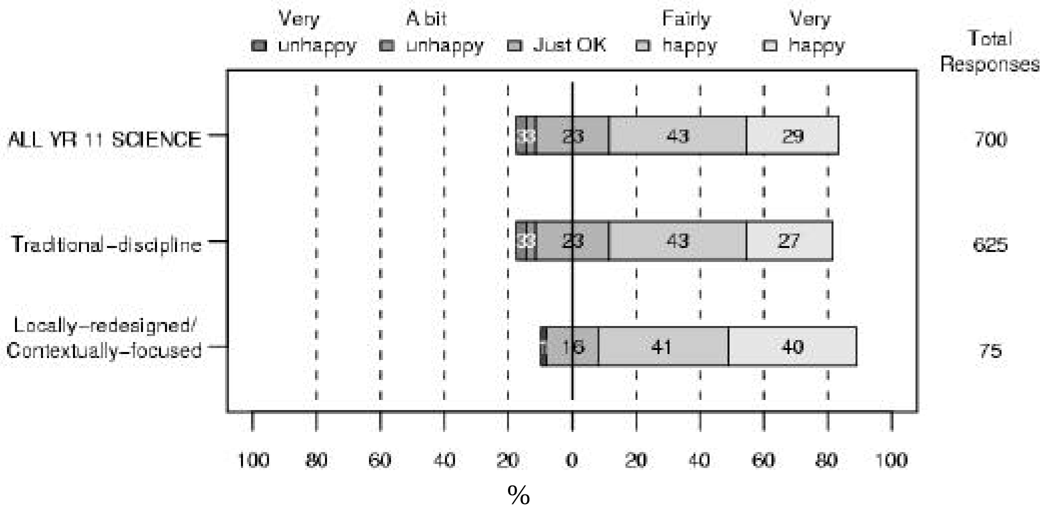


Figure 35 **Year 11 student perception of parent happiness with option choice in science**



© NZCER

Figure 36 **Year 12 student happiness with option choice in science**

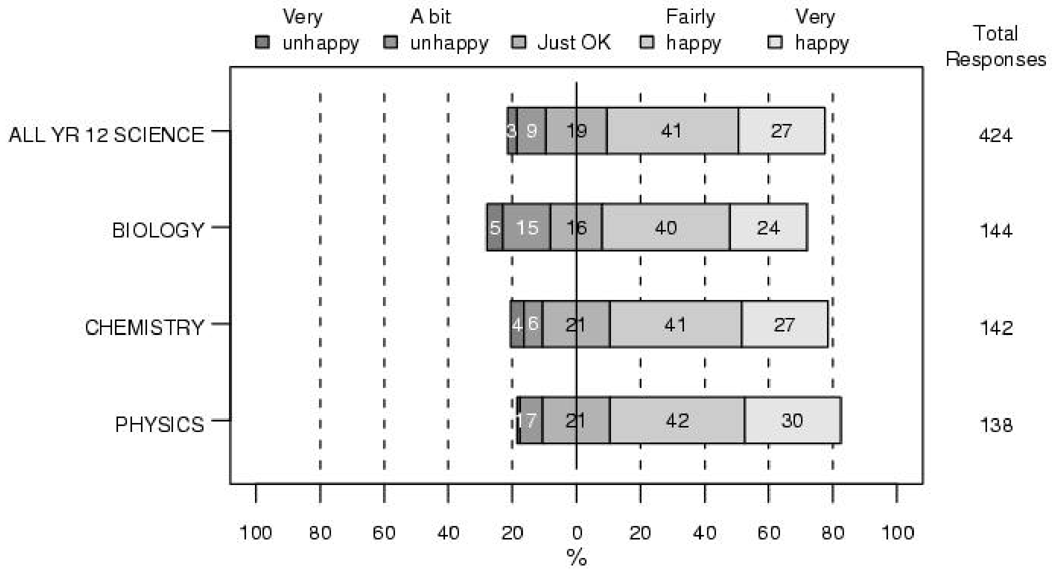
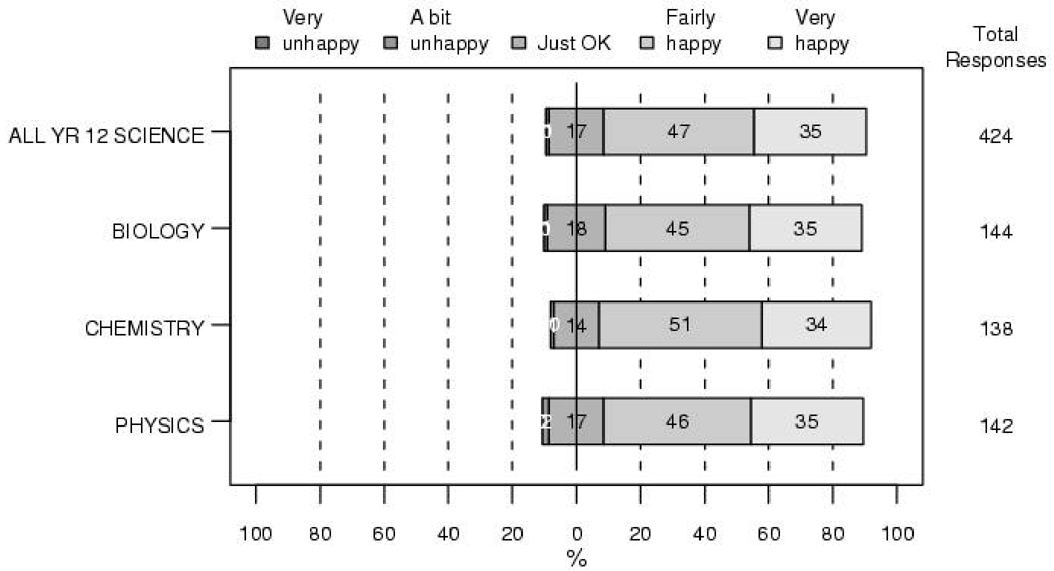


Figure 37 **Year 12 student perception of parent happiness with option choice in science**



© NZCER

Students' ideas about changes in their science courses

Table 46 **Changes 20 percent or more Years 11 and 12 students would like to see in science courses**

Change factor	Yr.11 science n=741	Yr.12 biology n=144	Yr.12 chem n =142	Yr.12 physics n =138
More interesting learning activities	32	23		24
More practical activities	30			
Less assessment pressure	25			
More links to everyday life	21			
More learning support from teacher			23	

The most commonly selected changes that would make Year 11 students happier in science were more interesting and practical learning activities. More interesting learning activities was the change factor most frequently chosen for both English and mathematics, and for a range of optional subjects (*see* Section Twelve). It was also chosen by more than 20 percent of responding Year 12 biology and physics students.

A change to more practical work in science was more likely to be chosen as a change factor by students who were taking traditional-discipline science courses. Since 59 percent of all Year 11 students who expected to enjoy science chose practical aspects as a sub-factor of enjoyment, this response pattern suggests that some of them have been disappointed.[31]

As in mathematics and English, Year 11 students would like less assessment pressure but less than 20 percent of students who wanted to see changes in Year 12 sciences identified this as a change factor. It may be our data was gathered too early in the first year of NCEA implementation at level 2 for this pressure to have been felt. Another possibility is that Year 12 students knew what to expect and were not as concerned as the Year 11 students for whom assessment for qualifications was new. Or it may be that some students were already thinking of ways to ease their assessment pressure unilaterally, as has been suggested in Section Five. This response bears further investigation.

Having more learning support from teachers was the only factor at Year 12 to register higher than 20 percent.

[31] However, cross-tabulation showed no association between the 2 responses for individual students.

© NZCER

Section Twelve

The optional subjects

Introduction

Time and space do not allow us to report in detail on all of the many optional subjects offered at Years 11 and 12 in our case study schools. We have made the task manageable by choosing to report on those optional subjects that were being taken by 10 percent or more of the whole student cohort at each year level in 2003.

Year 11 PE/health, which is included in this section, was compulsory in one school (Town School E) and was compulsory for some students in 2 others (City Schools A and B). It was, however, optional in the other 3 schools. Year 12 PE/health remains a compulsory subject in Town School E.

The optional Year 12 science subjects are excluded, because the 3 most common options (biology, chemistry, physics) have already been discussed in Section Eleven.

Some subjects that have essentially the same content and are assessed in similar ways may go by different names in the various schools. We have collated data for such subjects as one group in order to report on those that meet the 10 percent participation threshold. In 2002, Year 11 PE and health were coded as separate subjects but because so few of the 2003 students took health as a separate subject (22 students indicated that they participated in a health-only subject) we collated the 2 subjects together. Home economics is another subject where a change in coding has occurred. In 2002 it was not always clear whether a student was taking home economics or food technology and so we collapsed both subjects together and called them food technology. In 2003 the strategy of customising the first page of the questionnaire to each school (*see* Section Two) enabled us to keep these quite different subjects separate. The remaining top subjects for 2002 and 2003 have not been affected by coding changes.

© NZCER

Key findings for this section

The most popular Year 11 subjects in 2002 remained popular in 2003. They included PE, history, visual arts, information management, and graphics and design. The most popular 2003 optional subjects at Year 12 were mathematics, the 3 sciences, PE, recreation and sport, and computer studies. There were more choices of options at Year 12 than at Year 11.

Year 11 students who chose optional subjects with a strong traditional-discipline composition also chose traditional-discipline versions of their compulsory subjects. Students who chose some more contextually-focused optional subjects also chose (or were placed in) similar versions of the compulsory subjects. The majority of the popular optional subjects were chosen by students from across the whole cohort.

Taking Year 12 accounting or graphics and design is associated with the choice of traditional-discipline mathematics (or a Year 13 mathematics option). There was also an association between the choice of graphics and design, media studies, or history and the choice of traditional-discipline English (or a Year 13 English option). Computer studies, vocational-based studies, transition, or information management were subjects associated with the choice of locally-redesigned or contextually-focused mathematics and English options.

"I expected to enjoy it" was the highest rating choice factor across the Year 11 optional subjects and response rates were higher than those made for expectations of enjoyment in the compulsory subjects. At both year levels, interest and practical aspects are the top rating sub-factors of enjoyment. There was a significant relationship between the choice of practical aspects and interest for drama, information management, PE/health, graphics and design, and computer studies at both year levels. Practical aspects and interest were also linked for visual art and home economics at Year 11, and media studies and vocational studies at Year 12.

When students chose the future plans factor, life skills was the sub-factor most often selected across the optional subjects at both year levels. Music, home economics, PE/health, recreation and sport, and vocational studies were subjects chosen for life skills and also for their practical aspects.

In subjects where more than 20 percent of students wanted to see changes, these were most likely to relate to having more interesting learning activities, more practical work, or less assessment pressure. More Year 11 than Year 12 students wanted such changes.

The top options across the six schools

We begin this section with an analysis of the most popular optional subjects at Years 11 and 12, and we investigate how these choices align with choices of options within the compulsory

© NZCER

subjects. We then report on the responses to the 5 subject-choice factors provided on the students' questionnaire.

The most popular Year 11 options

In 2002 we reported that 12 subjects, including English, mathematics, and science, were being studied by 10 percent or more of the Year 11 students (Hipkins and Vaughan, 2002a). In 2003 there were 14 subjects, including English, mathematics, and science, that registered 10 percent or more student participation at Year 11. Physical education (PE) and health continued to be the most popular option (2002, 42 percent; 2003, 65 percent) although the apparent increase may have been partly an artefact of our change in coding procedures (*see* above). Table 47 compares the remaining 10 top optional subjects for 2003 with those for 2002. Grey-shaded rows are subjects being taken by more than 10 percent of students in 2003 but not in 2002.

Table 47 **A comparison of the most popular optional Year 11 subjects in 2002 and 2003**

Subject	2003 participation rates		2002 participation rates	
	%	N	%	N
History	20	180	21	151
Visual art	19	172	19	138
Information management	18	167	21	151
Graphics and design	17	151	20	146
Computer studies	16	146	<10	
Accounting	14	126	14	101
Geography	13	117	18	131
Home economics	11	96	16*	113
Drama	10	95	<10	
Music	10	92	<10	

* Also included food technology students in 2002.

Table 47 shows that students' choices remained relatively stable. While they still registered as popular subjects, there was a decline in numbers choosing Year 11 geography and home economics, although the latter can be attributed to coding changes (*see* above). Transition, which was the second highest subject in 2002 (27 percent), did not register above 10 percent in 2003. This points to a difference between the subject-choice priorities of the Year 11 cohort and the Year 12 cohort because transition remained one of the top subjects at Year 12 in 2003 (*see* below). It may be that transition was supplanted by the increasing popularity of the arts subjects and computer studies. Perhaps, one year into the NCEA reforms, students were more aware that these types of subjects, that typically make closer links to their interests and lives outside school than the traditional-discipline subjects, and that most of them expect to enjoy because they are interesting (*see* below), can equally well earn credits for the NCEA. Another possibility is that some students chose one of these subjects, or home economics, as a foil to the intensity of assessment in their traditional-discipline subjects.

We noted in 2002 that some teachers were concerned that students should maintain a foundation of compulsory subjects at least until the end of Year 11 (Hipkins and Vaughan, 2002a). The

© NZCER

comparison with Year 12 choices in each school, made possible by the expansion of the research in 2003, shows that optional choices were more limited for Year 11 students. They could choose just 2 or 3 optional subjects because English, mathematics and science were all compulsory. (The one exception was City School C where science was optional.) As shown in the school summaries in Section Four, there were fewer options to choose from at Year 11 than at Year 12 in all 6 schools. These 2 types of limits (number of options allowed to be chosen, number of possible options to choose from) also resulted in higher numbers of Year 11 students in the various options than in the Year 12 options.

The most popular Year 12 options

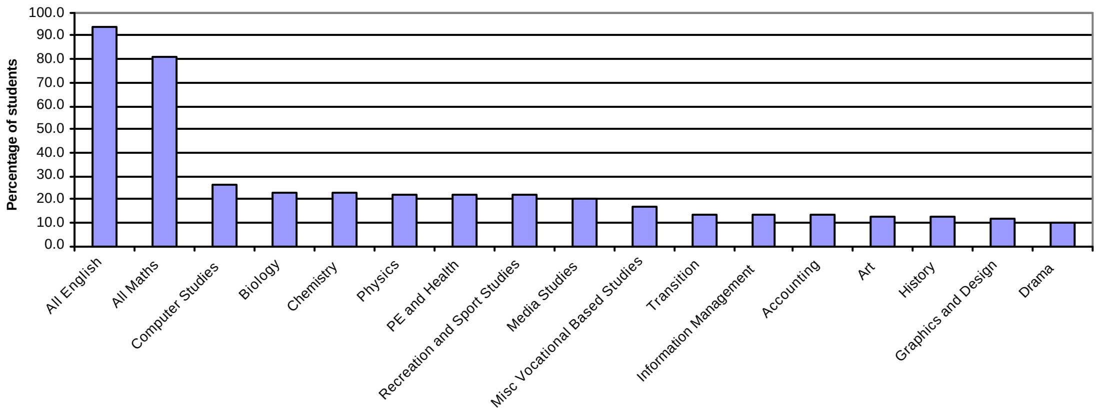
Twelve subjects (excluding English, mathematics and the optional sciences) had been chosen by 10 percent or more of the 2003 Year 12 students. Computer studies (27 percent) was the most popular option, followed by PE/health (22 percent), and recreation and sport studies (22 percent). Other subjects that had a high participation rate at Year 12, as well as at Year 11, were information management, accounting, art, history, graphics and design, and drama.

Media studies was chosen by 20 percent of the Year 12 students. This subject was not offered at Year 11 in any of the schools, although some students told us in 2002 that they would have liked to take it (Hipkins and Vaughan, 2002a, pp. 114–115).

Transition continued to be a popular choice for the 2003 Year 12 cohort (14 percent). A collection of courses that we have called "vocational studies" made up the final category of the top 12 group of optional subjects (other than the sciences) at Year 12. Under the umbrella of vocational studies we have collected the various employment-related subjects such as chef training, nannying, vocational sciences, and horsemaster's certificate, many of them likely to be Gateway-funded courses (Vaughan and Kenneally, 2003).

Figure 38 shows the most popular Year 12 optional subjects, including mathematics and the science disciplines. English, which is compulsory in all 6 schools, is also shown.

Figure 38 **Year 12 subjects being taken by 10 or more of the student cohort**



© NZCER

At Year 12, support for geography had halved. While 18 percent of the 2002 Year 11 cohort took this subject, only 9 percent continued to do so in 2003. Geography is one of the 2 optional subjects in which the 2003 Year 11 students said they would like to see a range of changes if they were to be happier with their choice, including a change of teacher (*see* below). It may be that geography, when actually experienced for the first time, does not live up to some students' prior conceptions.

Most of the 12 top options are offered at Year 12 in all 6 case study schools. Exceptions are media studies, which is not offered at City School A or Town School F, and information management, which is not offered at Town School E. Students select 5 Year 12 options in all the case study schools except Town School E, where they choose 4. The larger number of options results in students being distributed over a wider range of courses than at Year 11.

Patterns of subject combinations

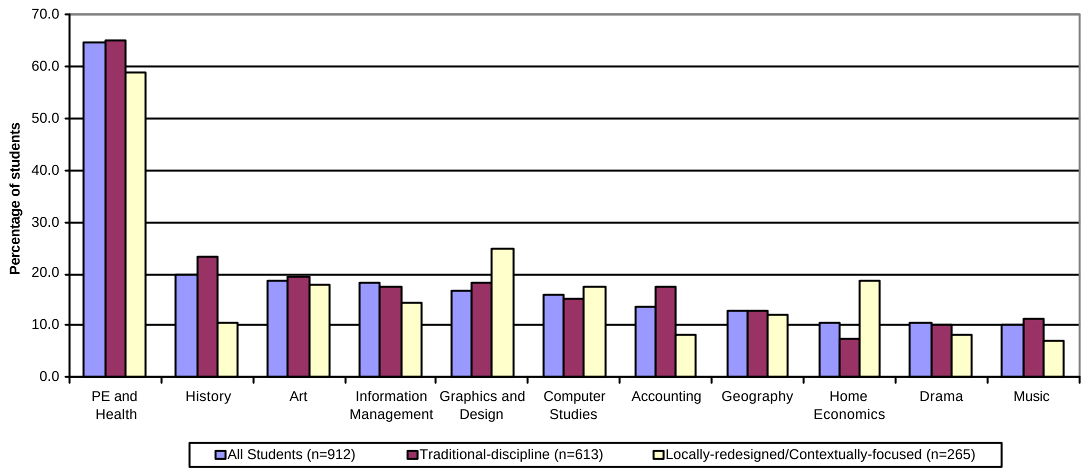
The 2002 report raised, but could not answer, questions about the nature of the combinations of subjects being taken by students who were perceived to have different learning needs. Were the students being streamed, in effect, by the combinations of subjects that they took? (Hipkins and Vaughan, 2002a). With data on option choices within the compulsory subjects available in 2003, we have shown that a third of the Year 11 students taking a locally-redesigned or contextually-focused version of mathematics were also taking similar versions of English and science (*see* Section Ten). Does this streaming effect extend to the types of choices made for optional subjects as well?

Combinations at Year 11

We checked how students' choices of optional subjects aligned with their choices of the various mathematics and English options. We found no differences related to the choice of Year 11 PE/health, art, information management, computer studies, geography, drama, or music and the choice of mathematics version. Students taking history or accounting were more likely to be taking traditional-discipline mathematics than locally-redesigned or contextually-focused mathematics. Students taking home economics and/or graphics and design were more likely to be taking the latter types of mathematics courses. These patterns are shown in Figure 39.

© NZCER

Figure 39 **Alignment of Year 11 optional subject choices with choice of mathematics option**



We found no differences between the choice of Year 11 PE/health, art, graphics and design, drama, home economics or music and the version of English chosen. However, students who had chosen history, accounting or geography were more likely to be taking traditional-discipline English. Information management and computer studies were associated with the choice of contextually-focused English courses. The overall pattern of subject type associations is summarised in Table 48.

Table 48 **Associations between choice of optional subjects and choice of English and mathematics options at Year 11**

Subject	**Association with td. Mathematics**	**Association with lr/cf mathematics**	**Association with td. Eng.**	**Association with cf Eng.**
History	✓		✓	
Accounting	✓		✓	
Graphics and design		✓	✓	
Computer studies				✓
Information mgmnt.				✓
Home economics		✓		
Geography			✓	

td = traditional-discipline options, lr = locally-redesigned options, cf = contextually-focused options – *see* Section Seven.

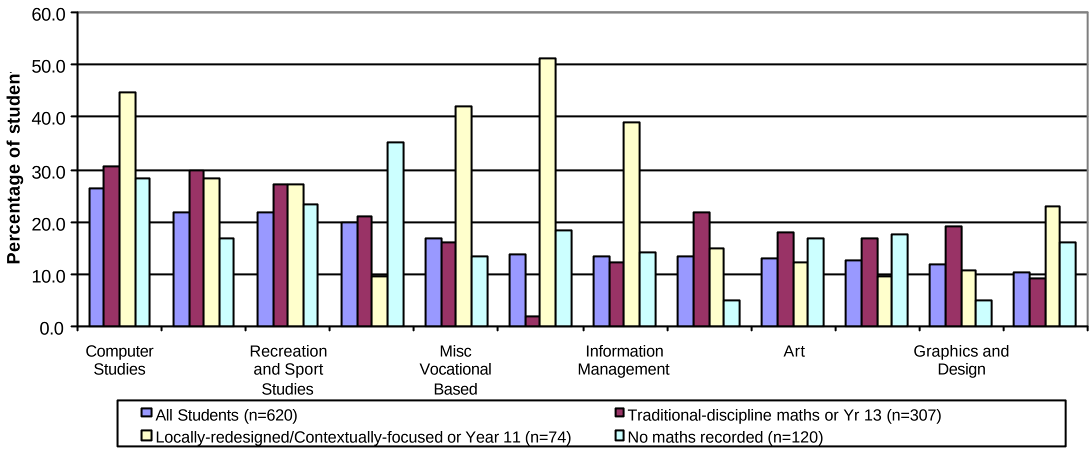
There does seem to be a pattern that students who chose optional subjects with a strong traditional-discipline composition also chose traditional-discipline versions of their compulsory subjects, while students who chose some more contextually-focused optional subjects also chose (or were placed in) similar versions of the compulsory subjects. However, the majority of the popular optional subjects were chosen by students from across the whole cohort. The streaming effect, which we suspected last year, may be a reality in the compulsory subjects for about a third of the students taking non-traditional options, but is less influential in the optional subjects.

© NZCER

Combinations at Year 12

Does this pattern we found at Year 11 hold at Year 12? We looked for a statistical association between the most popular optional subjects and the type of mathematics and English options chosen. Mathematics itself is optional at Year 12 although 81 percent of students continue to take it. Figure 40 shows the pattern of combinations of other optional subjects and choice of mathematics option.

Figure 40 **Alignment of Year 12 optional subject-choice with choice of mathematics option**



We found an association between Year 12 accounting or graphics and design and the choice of traditional-discipline mathematics (or a Year 13 mathematics option). Choosing computer studies, vocational-based studies, transition, information management, or drama was associated with the choice of a locally-redesigned or contextually-focused Year 12 mathematics course, or a Year 11 mathematics option. There was also an association between the choice not to take a mathematics course at all and the choice of media studies. No associations were found between choice of recreation and sport studies, art, or history and the type of mathematics chosen by Year 12 students.

A similar pattern of combinations was found for choice of optional subjects and choice of English option. Again, an association was found between the choice of graphics and design and the choice of traditional-discipline English (or a Year 13 English option). Other subjects to show the same association were media studies and history. As for mathematics, choosing computer studies, vocational-based studies, transition, or information management was associated with the choice of locally-redesigned or contextually-focused English options (or a Year 11 English option). No associations were found between the type of English chosen and the choice of PE/health, recreation and sport studies, accounting, art, and drama.

The overall pattern of Year 12 subject associations is summarised in Table 49. The cluster of subjects in the grey-shaded rows is strongly associated with the locally-redesigned or contextually-focused options in *both* English and mathematics, suggesting that some Year 12 students may indeed have selected clusters of similar types of courses. Smaller clusters associated

© NZCER

with either traditional-discipline mathematics or traditional-discipline English are also evident. As at Year 11, there were a number of popular subjects that were chosen by students from across the entire Year 12 cohort.

Table 49 **Associations between choice of optional subjects and choice of English and mathematics options at Year 12**

Subject	Association with td. mathematics	Association with lr/cf mathematics	Association with no mathematics	Association with td. Eng.	Association with lr/cf Eng.
Accounting	✓				
Graphics and design	✓			✓	
Media studies			✓	✓	
History				✓	
Computer studies		✓			✓
Vocational studies		✓			✓
Transition		✓			✓
Information mgmnt.		✓			✓
Drama		✓			

td = traditional-discipline options, lr = locally-redesigned options, cf = contextually-focused options – *see* Section Seven.

At Year 11 we found an association between the choice of a graphics and design course and the choice of a locally-redesigned or contextually-focused mathematics option. The situation changes at Year 12 where taking traditional-discipline mathematics and traditional-discipline English were both associated with graphics and design. It may be that this is the result of the "intellectualisation" of graphics and design – one of the technology suite of subjects. This change bears further investigation.

Influences on students' choices of optional subjects

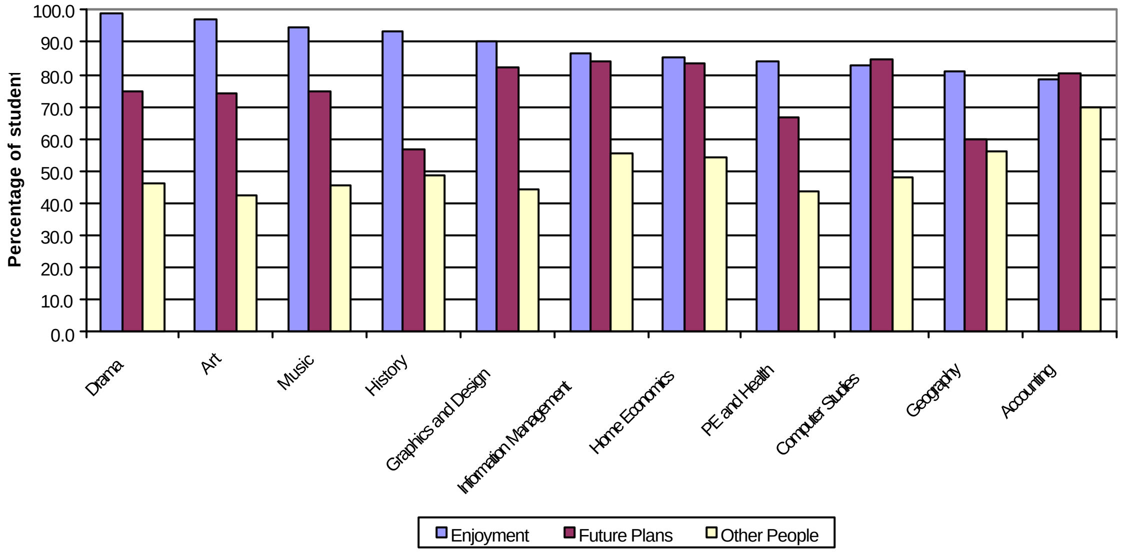
Students were asked to indicate which of a range of factors had influenced their choices of optional subjects. The 2 most commonly chosen factors at both year levels were:

- enjoyment, with expectations of interest, challenge, and practical aspects the overall most commonly mentioned sub-factors; and
- future plans, with life skills, and future career the most commonly mentioned sub-factors.

Year 11 students' patterns of responses for individual subjects are shown in Figure 41.

© NZCER

Figure 41 **Factors that influenced Year 11 students' choices of optional subjects**



Choice of the factor "I expected to enjoy it" ranged from 81 percent (geography) to 99 (drama) and was highest for the arts subjects. These response rates are higher than those made for expectations of enjoyment in the compulsory subjects (mathematics, 59 percent; English, 59 percent; science, 61 percent).

Choice of the factor "I needed it for my future plans" ranged from 57 percent (history) to 85 percent (computer studies). It was the most frequently selected factor for computer studies and accounting (80 percent). Again, this is a higher response rate than in the compulsory subjects (mathematics, 72 percent; English, 76 percent; science, 59 percent).

Choice of "talking to other people" ranged from 70 percent (accounting) to 42 percent (visual art). Parents were the most frequently mentioned group of people who influenced choices of optional subjects. Year 12 responses ranged from 58 percent for accounting to a low of 28 percent for media studies. It seems that accounting is the subject where more students perceive they were influenced by other people than in any other subject.

As with the compulsory subjects, students were much less likely to say that they chose subjects because they fitted the timetable. Geography (37 percent), computer studies (36 percent), and PE/health (35 percent) were the only subjects to register above 30 percent. Students were also less likely to say they made a choice for "easy NCEA credits". Responses ranged from 18 percent (drama) to 43 percent (information management).

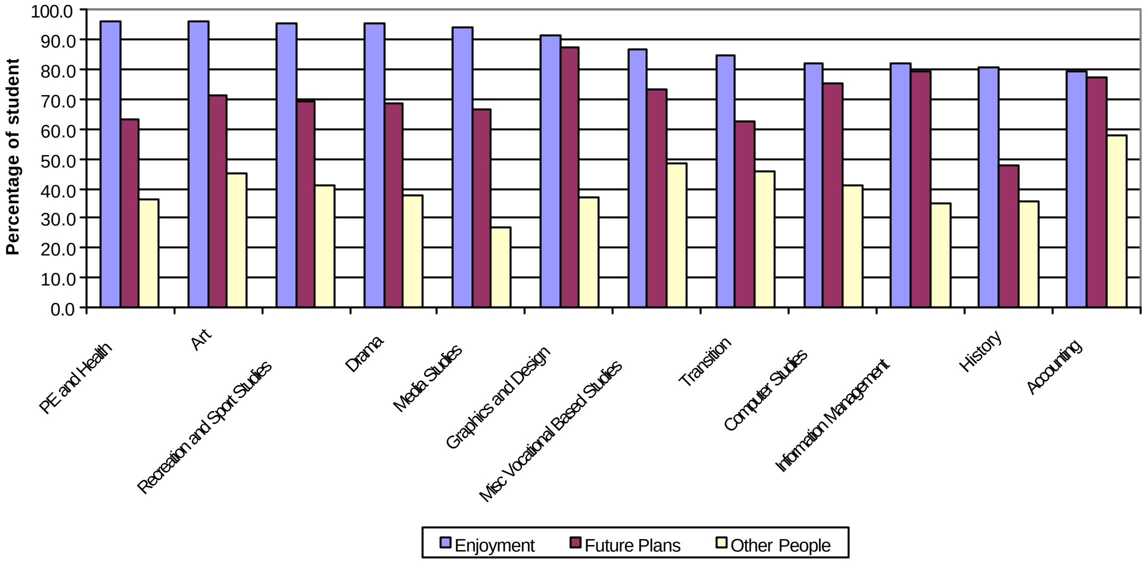
Factors that influenced Year 12 students' options choices

Enjoyment was the most frequently chosen choice factor for all the optional Year 12 subjects. It was rated especially highly as a reason for choosing subjects in the arts (visual art, 96 percent;

© NZCER

drama, 95 percent) and in the PE/health curriculum area (PE/health, 96 percent; recreation and sports studies, 96 percent). Again, this is a higher response rate than in the core subjects (mathematics, 61 percent; English, 51 percent) although more students rated enjoyment as a factor that had influenced their choice of the Year 12 science options (biology, 73 percent; chemistry, 82 percent; physics, 78 percent). These patterns are shown in Figure 42.

Figure 42 **Factors that influenced Year 12 students' choices of optional subjects**



Subjects in which many students chose future plans as a choice factor included graphics and design (88 percent), information management (80 percent), accounting (77 percent), and computer studies (76 percent). Future plans was the only factor with a response rate above 70 percent for mathematics and English at Years 11 and 12. At Year 11, mathematics and English ratings for this factor were lower than for any of the optional subjects. In contrast, at Year 12, where mathematics becomes an optional subject, future plans has a much higher rating (82 percent).

The influence of parents on the choice of Year 12 accounting has already been noted.

What makes optional subjects enjoyable?

Students who selected enjoyment as a factor that had influenced their subject choices tended to also select sub-factors that were chosen for the compulsory subjects. The most commonly chosen sub-factors of enjoyment were "I thought it would be interesting", and "I like the practical aspects", with "I thought it would be challenging" third. Figure 43 summarises the pattern of responses at Year 11 and Figure 44 the pattern of responses at Year 12.

© NZCER

Figure 43 **Sub-factors of enjoyment chosen by Year 11 students (interest, challenge, practical aspects)**

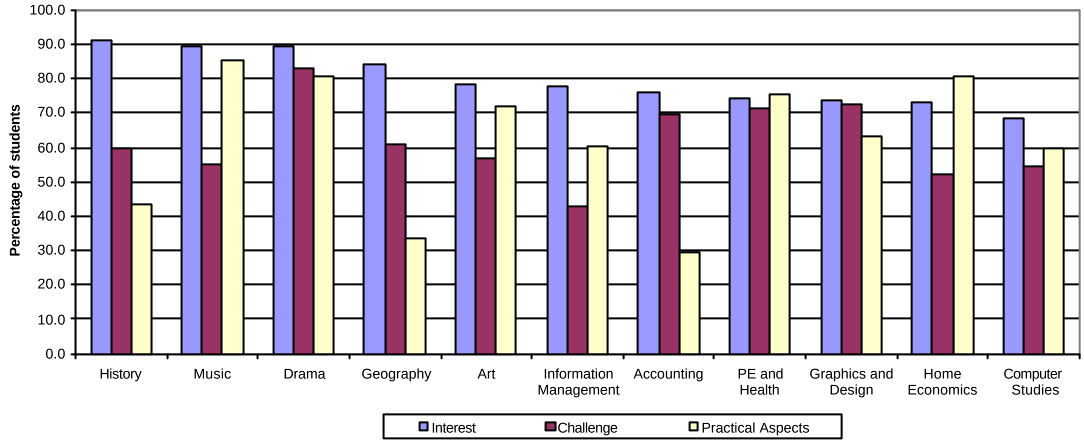
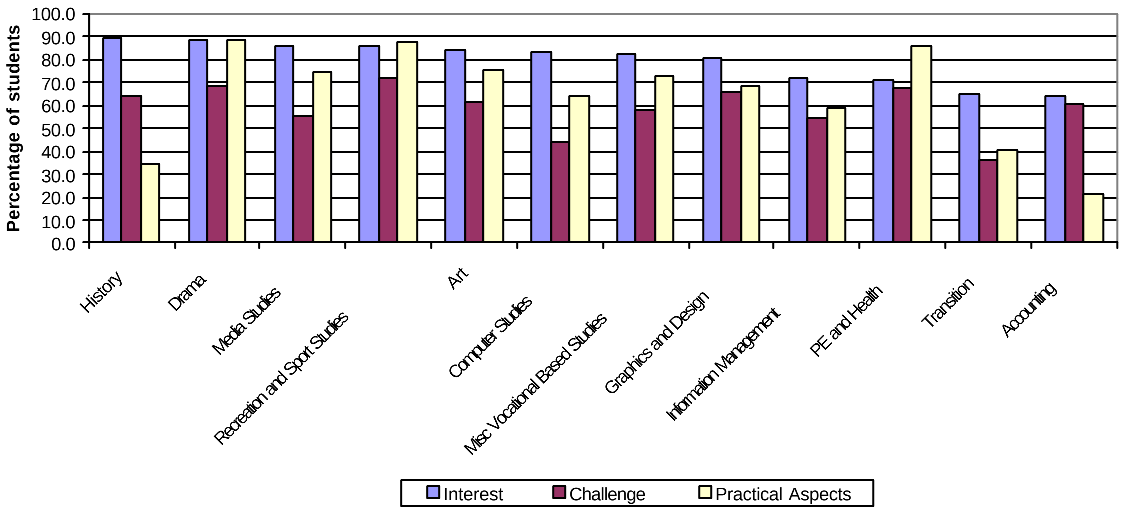


Figure 44 **Sub-factors of enjoyment chosen by Year 12 students (interest, challenge, practical aspects)**



The correlation between practical aspects and interest

We tested to see whether there was a significant relationship between the practical aspects and interest sub-factors of enjoyment in the optional subjects reported here. We found that this was indeed the case for drama, information management, PE/health, graphics and design, and computer studies at both year levels. Practical aspects and interest were also linked for visual art and home economics at Year 11, and media studies and vocational studies at Year 12.

In all these subjects, students' perceptions that their learning would be interesting were strongly linked to their perceptions that it would also be practical.

We note that it was home economics rather than food technology that made the "most popular" list in 2003. Assessment of the latter more closely follows the achievement standards of the

© NZCER

technology curriculum, with all the associated issues of "intellectualisation" (*see* Section Eight). On the other hand, home economics is more likely to be assessed with a mixture of achievement standards from health and selected unit standards, some of them industry related. This mix allows for assessment of more practical aspects of food preparation and use – aspects that students clearly link to expectations that the subject will be interesting.

No association between interest and practical aspects was found for history, geography and accounting at either year level. When a traditional-discipline subject is seen as not involving practical learning experiences (mathematics and English join history, geography, and accounting here) the influence of practical aspects drops and the association between interest and practical aspects has a weaker connection.

Other enjoyment sub-factors chosen by 70 percent or more of the students

The enjoyment sub-factor "I like the teacher" was chosen by 82 percent of Year 11 drama students.[32] This was also one of a small number of optional Year 11 subjects chosen by many students in expectation that they would be challenging. Other research has shown that the arts subjects may extend students in areas such as empathetic knowing that may not be tapped in more traditional subject learning (Beals et al., 2003). Clearly the relationships these students experience with the teacher are an important influence on their expectations that their learning will be enjoyable, if challenging. While this may seem like a case of "stating the obvious" the finding serves as a useful reminder that emotional and spiritual factors influence important subject-choice decisions.

The Year 11 optional subjects most likely to be chosen by students who expected to enjoy them because they thought they were "good at" them were music (70 percent), visual art (70 percent), and graphics and design (71 percent). At Year 12 they were graphics and design (78 percent), information management (74 percent), and recreation and sport (73 percent).

Perceptions that they are good at the subject may encourage students to think about careers in graphics and design. Figures 45 and 46 below show that many students also chose graphics and design with future careers in mind – at both Year 11 and Year 12. In 2002 we also found that graphics and design was the optional subject most frequently linked to future career as a choice factor. It may be that the varied career prospects in this field, and recent high-profile events such as the making of popular movies in New Zealand have heightened students' awareness of the range of job prospects (Hipkins and Vaughan, 2002a).

[32] Other high-rating subjects were PE/health (60 percent), home economics (57 percent), whereas just 33 percent of computer studies students selected this factor.

© NZCER

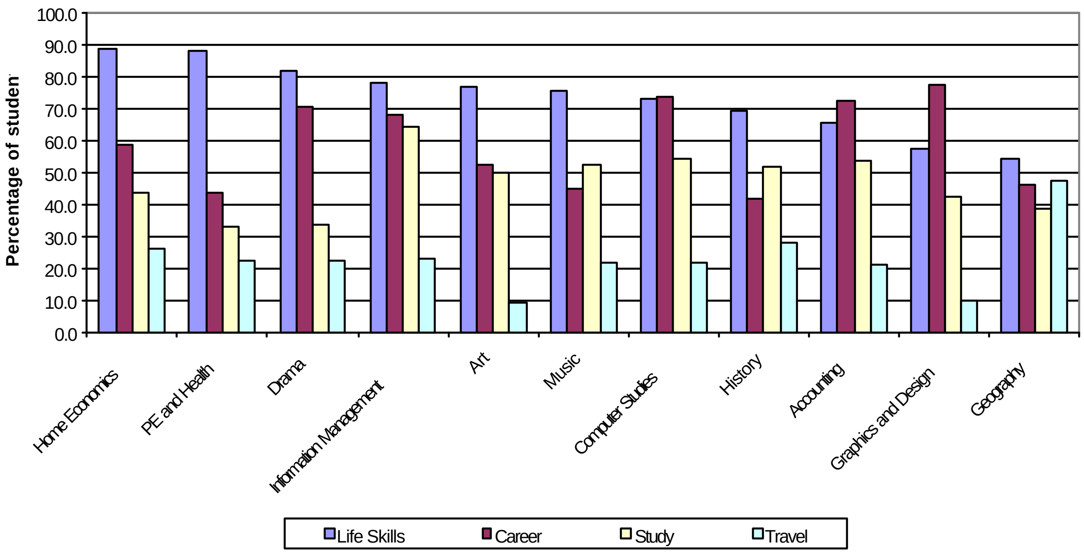
Future plans as an influence on students' choices of optional subjects

When compared to the sub-factors of enjoyment, fewer optional subjects appear to have been chosen with sub-factors of future plans in mind. Overall patterns are shown in Figures 45 and 46 below.

Life skills was often selected as a sub-factor in the choice of optional subjects across the 2 year levels. A number of subjects chosen for life skills were also chosen for their practical aspects (*see* above). They included music, home economics, PE/health, recreation and sport, and vocational studies. This seems a logical connection.

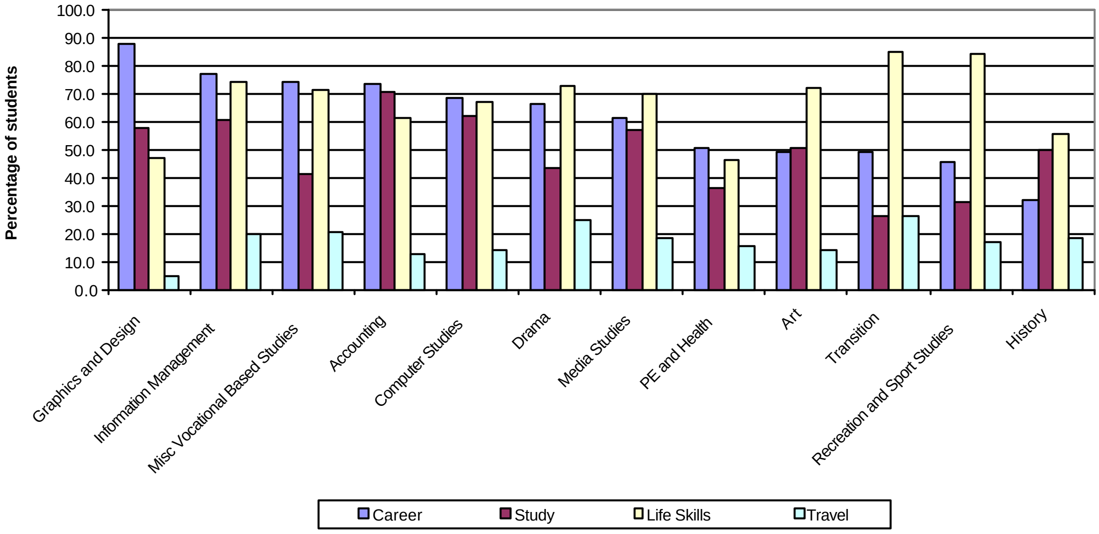
Computer studies, information management, vocational studies and drama were all chosen with both life skills and future careers in mind. Other subjects often linked to choice of future careers were accounting, and graphics and design. Future study was most often linked to accounting. Travel plans was most frequently mentioned as a reason for choosing Year 11 geography (47 percent).

Figure 45 **Sub-factors of future plans chosen by Year 11 students**



© NZCER

Figure 46 **Sub-factors of future plans chosen by Year 12 students**



Happiness with subject choice

Years 11 and 12 students are generally happy with the optional subjects they have chosen. As in the compulsory subjects, they perceive that their parents are also generally happy with their optional subject choices. However, some students taking Year 12 drama (19 percent) and Year 12 transition (15 percent) indicated that they felt their parents were not happy with their subject choice.

Most students who chose Year 11 geography expected to enjoy it (81 percent). By May 2003, when the student surveys were completed, 8 percent of all Year 11 geography students indicated that they are not completely happy with their subject choice. Thirty-four percent of all geography students said that they would be happier with the choice if they were given more interesting learning activities, 27 percent wanted more practical work, 26 percent wanted a change in teacher, and 21 percent said that changing to another subject would make them happier.

Thirty-seven percent of all students who were taking Year 11 geography said they did so because it fitted their timetable, one of only 2 Year 11 optional subjects where the response rate for this factor was over 30 percent. (The other one was computer studies.) We checked to see if those students who took geography because it fitted the timetable had also indicated that they were not happy with this choice. There was no correlation pattern between these 2 sets of responses, suggesting that disenchantment with a forced option choice is not the source of students' desire to see changes in this subject.

Thirty percent of all students taking accounting wanted more interesting learning activities, 29 percent wanted a change of teacher, and 22 percent wanted more support from their teachers. Year 11 mathematics and Year 12 chemistry were other subjects where more than 20 percent of students who wanted a change wanted that change to be more support from the teacher. It may be

© NZCER

that the mathematical aspects of accounting and chemistry were causing concern for some learners in these subjects.

More interesting learning activities were also chosen by more than 20 percent of students who were not happy with their choice of Year 11 information management (29 percent), music (24 percent), history (23 percent), and computer studies (21 percent). In music, some students would like more practical work (33 percent). Less assessment pressure was chosen as a desirable change by some students in history (22 percent), music, and visual art (both 21 percent).

When asked what, if anything, would make them happier with their subject choices, less than 20 percent of Year 12 students suggested any changes to recreation and sport studies, drama, graphics and design, vocational studies, and PE/health.

Changes requested by 20 percent or more of Year 12 students taking a subject included:

- more interesting learning activities in accounting (35 percent), transition (31 percent), computer studies (26 percent), information management (24 percent), and history (20 percent);
- more practical work in transition (29 percent) and media studies (20 percent); and
- less assessment pressure in art (23 percent).

Fewer changes overall were requested by the Year 12 students. Although there are no immediately apparent reasons for this to be so, we could speculate that students had a clearer understanding of what would be involved in specific subjects at Year 12, especially where they had already studied these at Year 11.

© NZCER

© NZCER

Section Thirteen

Subject changes, new possibilities

Introduction

We asked students to complete a final section of the questionnaire on subjects they may have wanted to take but didn't, or couldn't. This section reports on their responses.

Thwarted (or perhaps just wishful) hopes need to be discussed in a context where the extent of the actual number of choices available to students is clear. Responses to actual subjects taken (from the first page of the questionnaire) show that most Year 11 and Year 12 students were taking 6 subjects in 2003. Table 50 below shows the details.

Table 50 **Numbers of subjects taken by each Year 11 or 12 student in 2003**

	Year 11		Year 12	
No. subjects	**No. students**	**%**	**No. students**	**%***
One	0	0	4	0
Two	5	0	11	2
Three	9	1	11	2
Four	12	1	21	3
Five	160	18	69	11
Six	644	71	503	81
Seven	82	9	1	0

*Percentages may not add to 100 because of rounding.

Key findings for this section

A majority of the 2003 Years 11 and 12 student cohorts were taking 6 subjects.

Nearly half the Year 11 students would have liked to take at least one different subject, with home economics the most popular choice. Just over half the Year 12 students would have liked to take at least one different subject, with photography the most popular choice.

When grouped by curriculum area, arts subjects were those most frequently wanted, at both year levels. Additional languages were the type of subjects not already offered that students were

© NZCER

most likely to want, especially in those schools that already offered a range of languages. Personal interest was the factor most likely to influence students' desire for subjects not already offered by the school.

Timetable clashes or not being allowed, either because a class was already full or because the student did not meet prerequisites, were the most common reasons for not being able to take subjects. Although students saw parents as influencing choices *of* subjects (*see* Sections Ten-Twelve) they were seldom seen as having *prevented* students taking subjects they wanted.

Subjects offered at the school that students could not take

A duplicate of the front page of the questionnaire, listing all the subjects available for that year level, was provided to capture patterns of students' thwarted subject choices (*see* Appendix A). The subjects that students were interested in taking, but said they could not, varied between the year levels.

Year 11

Just under half (48 percent) of all Year 11 students indicated that they had wanted to take another or a different subject. Most of the responding group (25 percent) said they had only missed out on one subject but 12 percent of them indicated they had missed out on 3 or 4 subjects they had wanted to take, as shown in Table 51.

Table 51 **Numbers of different subjects Year 11 students wanted to take**

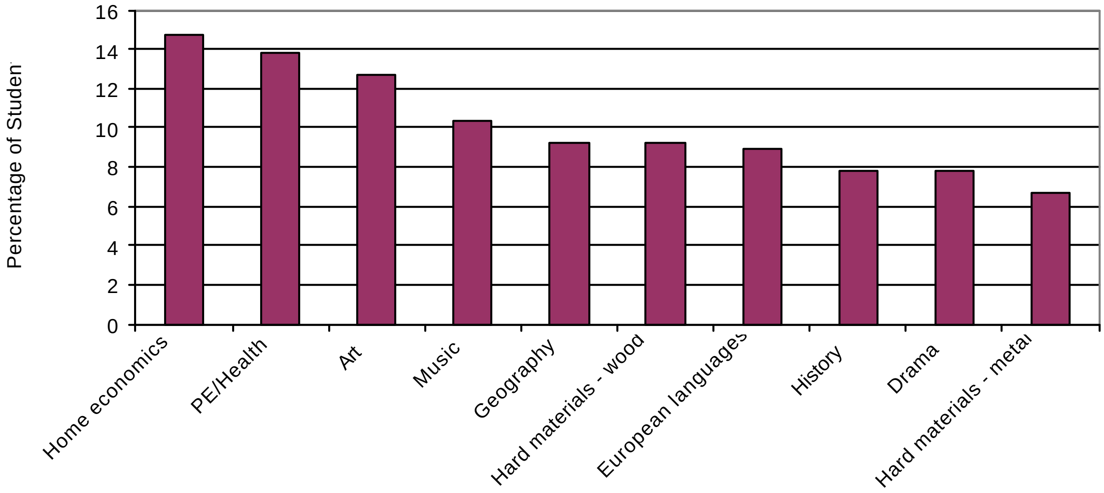
Subjects missed	No. students	%*
None	484	53
One subject	225	25
Two subjects	96	11
Three subjects	50	6
Four subjects	57	6

* Percentages may not add to 100 because of rounding.

Figure 47 summarises responses from the 435 Year 11students who indicated that they would have liked one or more different subjects. Students had optional subjects in mind as they responded and the most frequently indicated subjects were home economics (n = 64), PE/health (n = 60), art (n = 55), and music (n = 45). No different versions of the compulsory subjects (*see* Section Seven) featured in the "top ten". This supports students' responses that showed they were generally happy with the choices in these subjects (*see* Sections Ten and Eleven).

© NZCER

Figure 47 **Top 10 subjects Year 11 students wanted to take and could not**



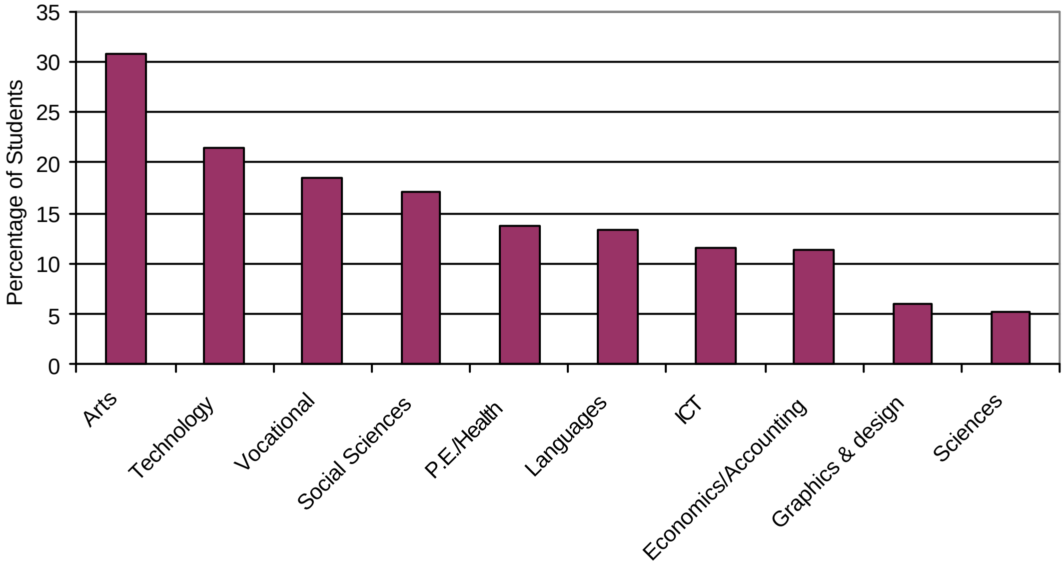
If all the subjects students indicated are grouped into curriculum areas, a slightly different picture emerges – one that underlines the popularity of the arts subjects as choices students would *like* to have made but could not. In Section Nine we noted arts HODs' views that timetabling practices and parents' perceptions of the arts as leisure activities operated against students being able to freely choose these subjects. This pattern appears to support that perception.

Technology and vocational subjects were the curriculum areas where student choices were next most likely to have been thwarted. In making the groupings shown in Figure 48 on the next page we have included home economics/food and nutrition courses in the "vocational" category. Although this subject tends to sit within technology departments or faculties it is typically offered to students as a practical, hands-on alternative to food technology, and is assessed via a combination of achievement standards drawn from the PE/health and industry related unit standards. The other single subject included within our "vocational' category is automotive training.

Economics is considered by some schools to be a social science, and accounting is officially part of the mathematics curriculum area. However, we have grouped them together in Figure 48, to acknowledge parents' and students' perceptions about "the type of subject" they are. Similarly, although graphics and design is often administered by the technology department, we have kept it separate in Figure 48 because it is seen as a distinct "type" of subject.

© NZCER

Figure 48 **Subjects Year 11 students wanted to take, sorted by curriculum area**



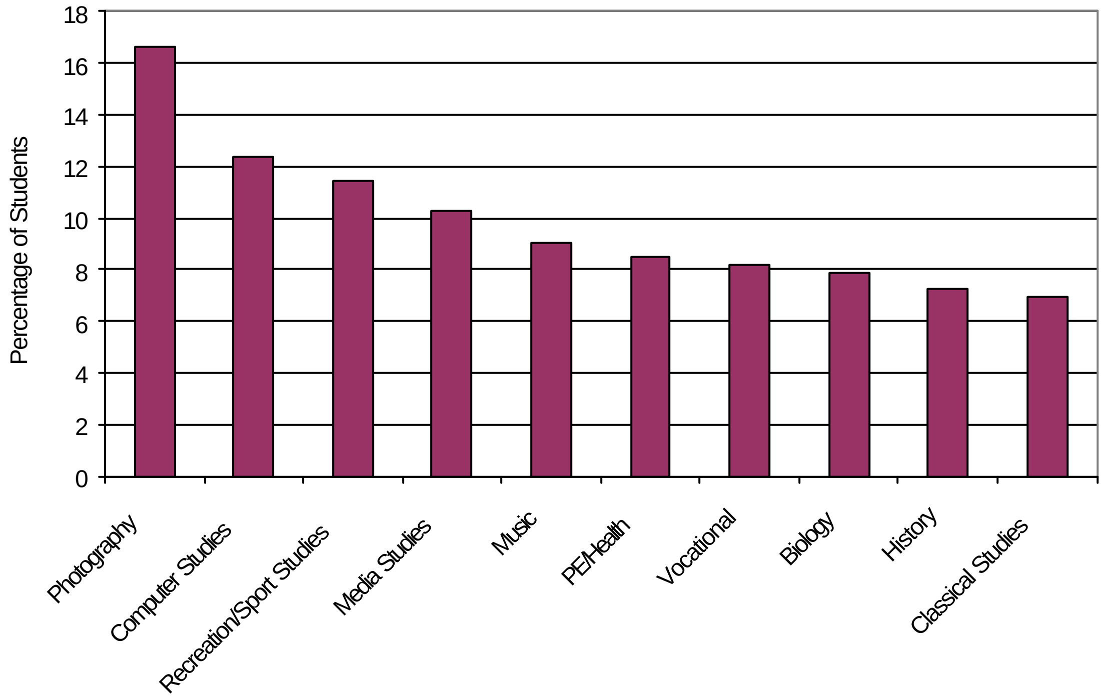
Just under half of the responding students (49 percent) wanted to take more than one different subject. It is possible that some of them were interested in taking several subjects within the same curriculum area and this may have skewed some of the data shown in Figure 48. For example, if a number of this group indicated they were interested in taking *several of* drama, music, and visual art, this would have the effect of bumping up numbers in the curriculum area of the arts. Nonetheless, if the pattern shown here is related to enjoyment factors for optional subjects (*see* Section Twelve), reasons for wanting to take these subjects (discussed later in this section), and comments from the arts HODs in each school (*see* Section Nine), the strength of students' desire to study more arts subjects holds.

Year 12

The subjects most wanted by responding Year 12 students (54 percent) included some that were not available at Year 11. The specialised nature of some of these subjects means they were more likely to be limited by class size, teacher availability, or timetable restrictions. This is borne out by reasons given by students for not being able to take them (*see* Table 52). The 10 most frequently cited subjects are shown in Figure 49.

© NZCER

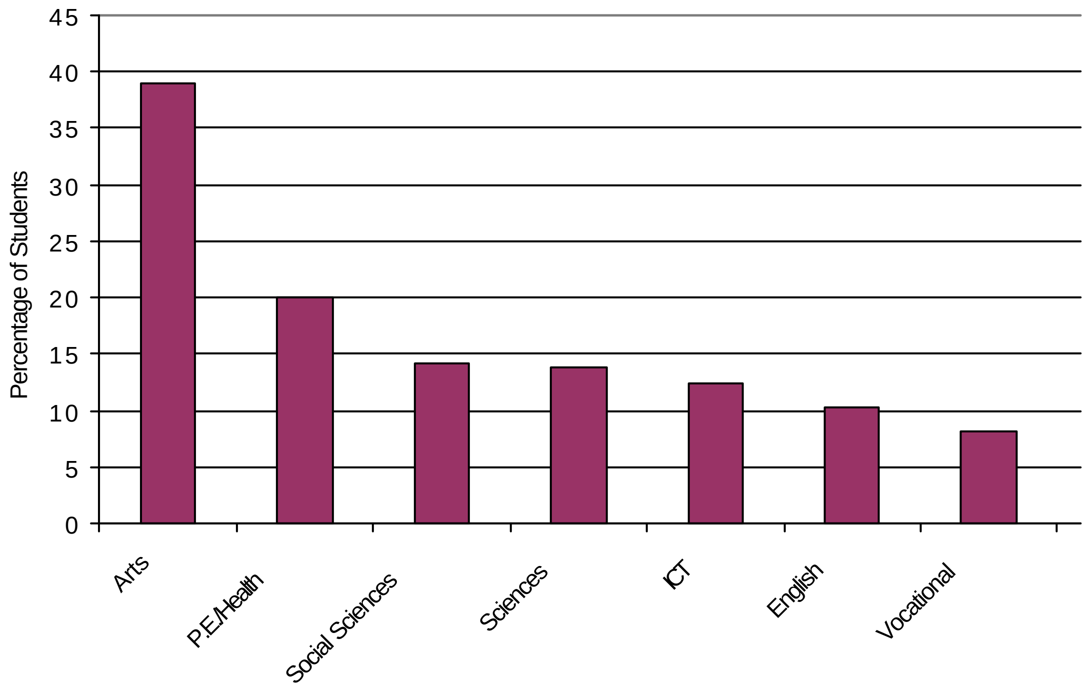
Figure 49 **Subjects Year 12 students wanted to take but could not**



Photography (n=55), computer studies (n=41), recreation and sport studies (n=38), and media studies (n=34) were the top 4 Year 12 choices. Two of these, along with biology (n=26), and classical studies (n=23) were not cited by the Year 11 students. However, with one exception, they are first offered at Year 12 (biology is offered in one school at Year 11) and the questionnaire only provided students with a lists of possible subjects available at their particular year level. As at Year 11, when subjects are grouped by curriculum area, the arts are shown to be the most popular type of thwarted subject choice. These patterns are shown in Figure 50 on the next page.

© NZCER

Figure 50 **Subjects Year 12 students wanted to take, sorted by curriculum area**



There were fewer subject areas of particular interest for Year 12 students and there were some notable differences to the pattern of responses made by Year 11 students. Technology, languages, economics/accounting, and graphics and design all featured as curriculum areas wanted by Year 11 students but not seen as an issue at Year 12.

English, which remains compulsory at Year 12, rated a mention by more than 10 percent of respondents. These responses must have been from students who were not able to access their choice of option (traditional-discipline, locally-redesigned or contextually-focused – *see* Section Seven) within the subject, although it was possible for students to choose media studies in lieu of English in one school.

The sciences, which are no longer compulsory at Year 12, also appeared. With one subject "science" now splitting into at least 3 (biology, chemistry, physics) and often more options, it was inevitable that not all students could take their preferred individual combinations of these and any other subjects they may have chosen. Most schools rework these juxtapositions each year to meet the choice combinations of as many students as possible (Hipkins and Vaughan, 2002a) and each science was likely to have been juxtaposed on a timetable line with subject(s) that caused clashes for the fewest students.

We checked the responses of all students who were taking at least one Year 12 science course and who said they had wanted to take a subject they couldn't. While too few students were taking all 3 sciences for any statistical analysis to be meaningful, it was apparent that PE/health and recreation and sport were the 2 subjects Year 12 science students are most likely to miss out on taking.

© NZCER

Eighteen of 28 students who wanted to take PE were also taking at least one Year 12 science, as were 24 of 37 students who wanted to take sport and recreation.

Year 12 students seemed less likely to miss out on wanted vocational subjects, perhaps because they had more vocational options on offer, or because more subjects are compulsory at Year 11 so less optional choices can be made. It is also likely at Year 12 level that many of the vocational options were funded by STAR and Gateway – options usually made available only to senior students (Vaughan and Kenneally, 2003).

Students' perceptions of reasons for being unable to take subjects

In 2002 we noted that, regardless of the effort of those who build each school's timetable, it is impossible to satisfy the individual subject combinations desired by every single student (Hipkins and Vaughan, 2002a). Some students will miss out on combinations they seek because of timetable clashes. However, this is not the only reason that students may be denied access to a subject. Safety concerns may lead HODs to restrict subject entry where students have a prior history of misbehaviour in practical classes and Sections Seven–Nine have briefly outlined issues of prerequisites for courses where a certain level of prior knowledge and/or skill is regarded as essential. A third type of reason may originate outside the school, when parents or caregivers impose their wishes over students' subject choices.

With these factors in mind, students were asked to choose from the 3 types of reasons for not being able to take one or more subjects they had wanted. These responses are summarised in Table 52 below, with percentages calculated from the total student cohort. Patterns of responses were similar for both year levels, although timetable clashes were more of an issue at Year 12. This is perhaps unsurprising since all 6 schools offer more subjects in total at Year 12 (*see* Section Four).

Table 52 **Reasons students were unable to take a particular subject**

Reason	Year 11 (n=912)	Year 12 (n=620)
Timetable clash	23	38
Was not allowed	21	21
Parents did not want me to	4	4

Students were able to give more than one answer. However, just over two-thirds of responding students in both year groups chose only one reason (67 percent at Year 11; 68 percent at Year 12).

Students who said they were "not allowed" to take a particular subject were asked to specify why from a provided sub-set of reasons. Not all students provided reasons. Responses of those who did are shown as percentages of the total student cohort at each year level in Table 53 below.

© NZCER

Table 53 **Reasons students were "not allowed" to take subjects they wanted**

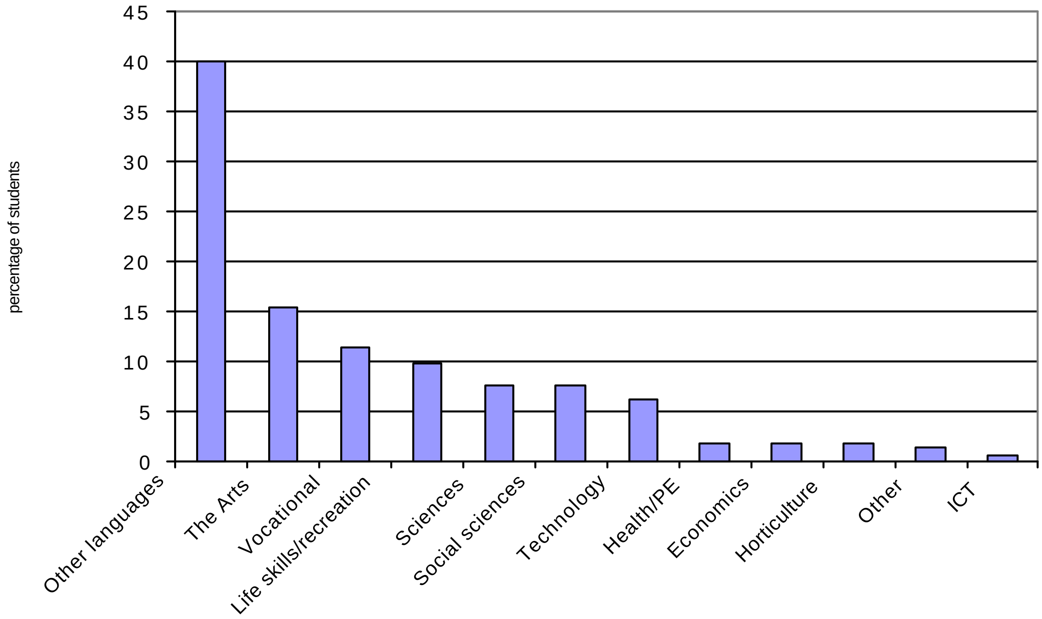
Reason	Year 11 (n=912)	Year 12 (n=620)
Class was full	10	9
Have not done it before	7	10
Did not get good marks	2	4
Past poor behaviour	1	1

Results were similar for both year levels, with prerequisites (having done it before/good marks) slightly more of an issue at Year 12. We note that limits on class sizes are essentially a timetable/teacher availability and funding problem, so they are the same *organisational* type of restraint as direct timetable clashes. Interviews with the HODs suggested that students who changed their minds at the last minute, or those who transferred in from other schools, were most likely to miss out on subject choices for these reasons.

Subjects students want that schools do not offer

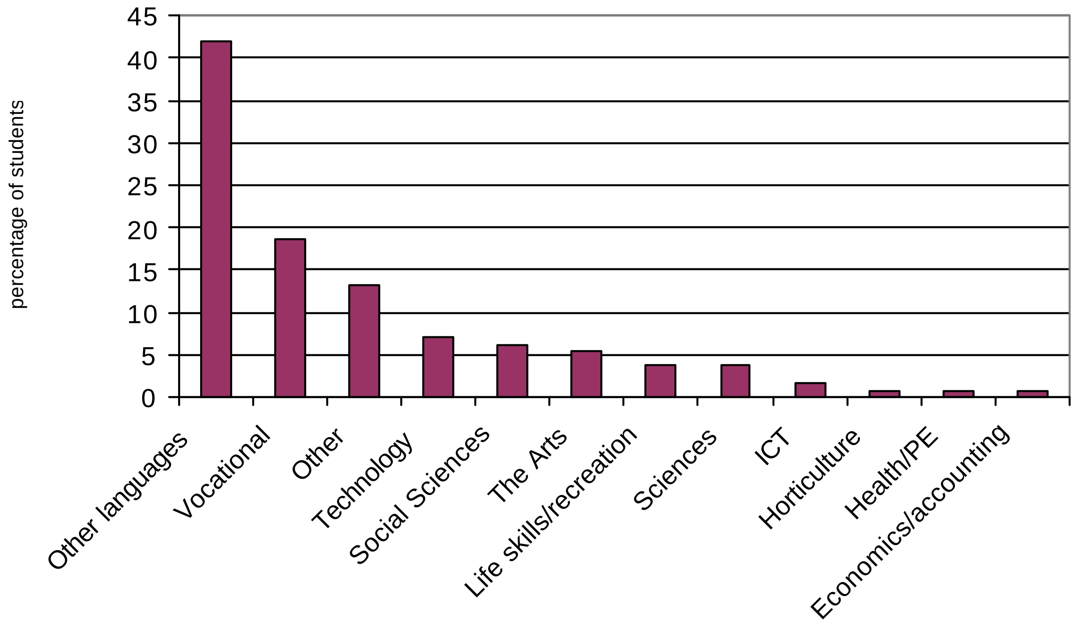
The questionnaire also asked students about subjects they had wanted to take that were *not* offered in their school. These were coded into subject areas as shown in Figures 51 and 52 below and on the following page.

Figure 51 **Curriculum areas in which Year 11 students wanted more/different subjects**



© NZCER

Figure 52 **Curriculum areas in which Year 12 students wanted more/different subjects**



At both year levels 40 percent of responding students wanted more languages other than English[33] added to the school's overall curriculum. Very few students at either year level were currently taking more than one language (18 percent at Year 11; 13 percent at Year 12). It is possible that the students who already took languages within each school were those who were most interested in taking more languages.

The popularity of "other languages" at both year levels is skewed by an over-representation of students from 2 of the 3 city schools. City School A's and City School B's students represented nearly three-quarters of the Year 11 students who wanted to be able to take languages their school did not offer (73 percent of responding students). City School B's students represented 41 percent of the students who wanted to take languages not offered in their school. No other single school represented more than 17 percent of the total responses.

Responding City School A and B students were asking for *more* languages to be offered. In addition to English, City School A already offered Chinese, French, Latin, Samoan, and Mäori at Year 11 and all of these plus Mäori Performing Arts at Year 12, and City School B offered French, Mäori, Mäori Performing Arts, and Japanese at Year 11 and Year 12. These schools already offered, and had proportionately more students enrolled in, more languages than any of

[33] Te reo Mäori was coded separately from English in order to be able to include students who were not able to access or enrol in that class within their school, or who were not offered that subject at their school. It should be noted, however, that where English was compulsory at School B, students were able to take Mäori instead.

© NZCER

the other case study schools and were 2 of 4 schools to offer ESOL classes at Year 11, and 2 of 5 to offer it at Year 12. We noted a similar pattern of responses in 2002, suggesting that:

> the more choice students are offered, the more they seem to expect to have. In the school that offers the most languages, students wanted even more. In the school that offers the most ‘alternative’ courses, students wanted even more of these (Hipkins and Vaughan, 2002a, p. 10).

In making this observation, we do not mean to suggest that students are just being irksome, (although we can understand why the teachers involved in timetabling at each school might think so!). It may well be that students are simply reflecting a job well done by teachers who believe they should be opening up a world of possibilities for students. In that case, students may simply be wanting to extend their interest in a particular area, particularly if they also feel a growing sense of competence and achievement in that area.

Reasons for wanting different subjects

Personal enjoyment/interest (n=137) was by far the most popular type of reason given the Year 11 students who said they wanted to take subjects not offered by their school. (This was also the most popular reason given by responding Year 11 students in 2002.) Future career (n=40) was selected as the next most important reason, although this type of response was some way behind enjoyment and personal interest. Overall patterns of responses are shown in Figure 53 on the next page.

Figure 54 on the next page shows that pattern of responses for the 2003 Year 12 students. As at Year 11 (Figure 53), personal enjoyment/interest reasons (n=94) were rated ahead of all other reasons by a considerable margin.

It is likely that future career did not rank very highly because students were already doing subjects that accounted for this influence. In earlier sections of this report, we saw that future plans were a consistently cited influence on students’ subject choices in English and mathematics and science, and that future career often cited as a sub-factor within future plans. It is possible that students felt that they had broadly accounted for “future career” in these other choices, leaving “space” for subjects to be pursued for personal interest.

© NZCER

Figure 53 **Types of reasons Year 11 students gave for wanting subjects not offered by their school**

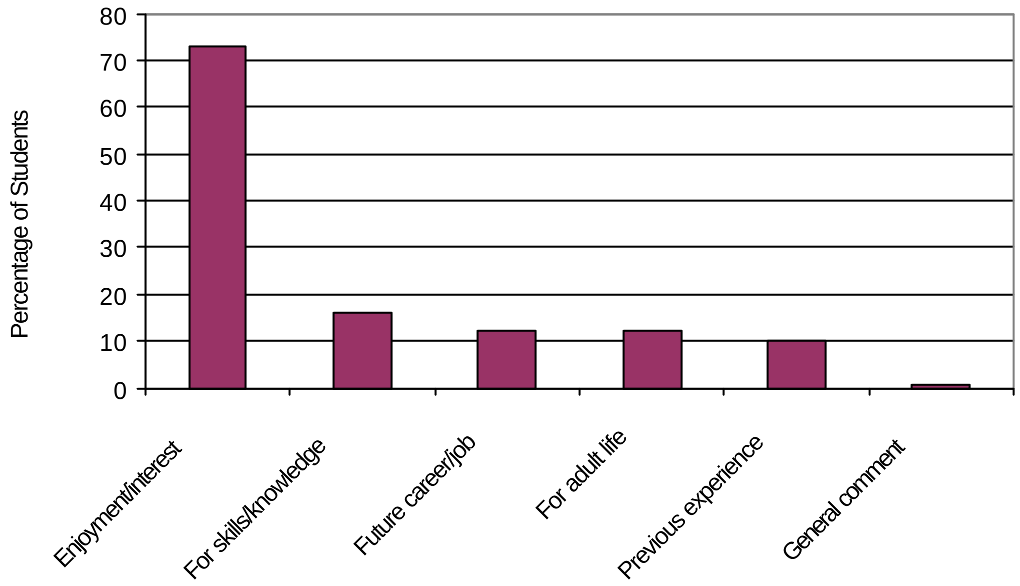
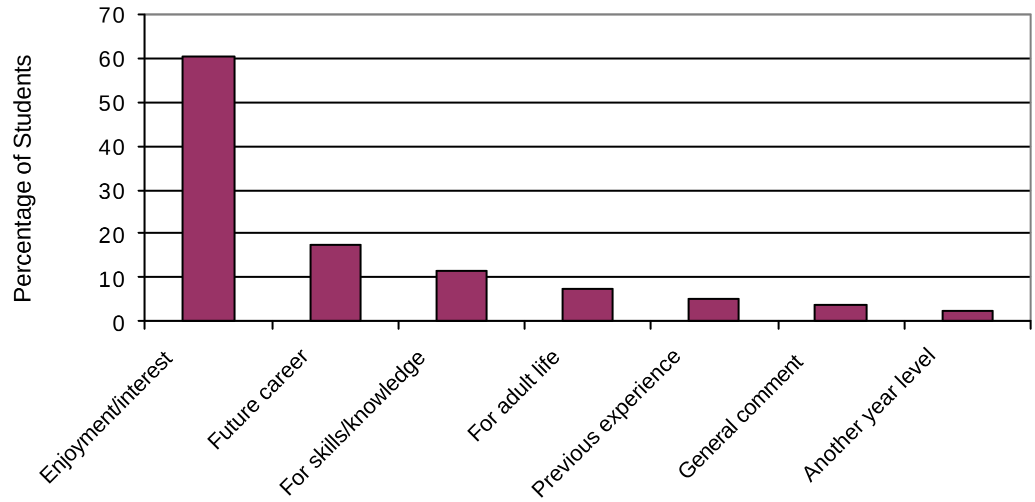


Figure 54 **Types of reasons Year 12 students gave for wanting subjects not offered by their school**



© NZCER

© NZCER

Section Fourteen

Issues and questions

A main aim of this report is to build a rich picture of the nature and prevalence of the differentiated subject learning that is being offered to students who are seen to have different types of learning needs, which are often equated with different ability levels. This situation is not, of course, something that has newly arrived with the NCEA. Indeed some subjects, including mathematics and languages, are seen to have a long history of such strong ability-level differentiation (Reay, 1998). What has changed with the introduction of the NCEA regime is that the qualifications gained from the variously differentiated courses have parity of esteem – at least in theory. Students work towards the same qualification regardless of the specifics of their subject combination.

In 2002 we saw that the NCEA offered an opportunity to transcend the academic/vocational divide as students in "cabbage" subjects were being encouraged to take up the same sorts of assessment opportunities within the NCEA as those in courses traditionally considered more "academic". However, the parity of esteem for the various national certificate qualifications whose content can vary widely now seems to us to leave unchallenged assumptions about what certain "types" of students are capable of learning and could find valuable in their future lives, and about the relative status of learning achievements of different types.

Having analysed the nature of the types of school subjects in 5 curriculum areas (English, mathematics, sciences, technology, and arts) being offered in 2003, we now ask, should we regard this change in opportunity as a one-way-street from "vocational" to "academic" or should the binary break down in both directions? If they are to succeed in a pluralistic, uncertain future world, "academic" and "vocational" students *all* need to be equipped with at least some of the skills that such assumptions would assign to the "other" group. The key question seems not to be of an either/or nature but rather how we can best equip all students to have *both* practical *and* knowledge learning needs met. To these 2 types of learning outcomes (learning to *know*, learning to *do*) the future-focused UNESCO Delors report would also add learning to *live together* and learning to *be* (Delors, 1996).

By shaping our introduction to the challenges we address in this section in this way, it could be said that we have brought into the assumption that what is assessed (especially for qualifications) is the same thing as what is taught and learned. We do not agree that this *should* be so, but that it *is* typically so was apparent in the conversations we had with teachers about issues such as credit

© NZCER

reduction (*see* Section Six) or about what could or could not be omitted from certain courses of learning (*see* Sections Seven–Nine). This conflation is also common in populist articles about the NCEA:

> They're talking of course about the NCEA – the system they [teachers at an elite Auckland school] *have to teach* and administer every day, the system that's sticking in their craws. Introduced 2 years ago, it was supposed to be a better way of *learning, teaching* and assessing (Welch, 2004, p. 21, emphasis added).

The assumption that assessment should dictate and prescribe the classroom curriculum helps to unquestioningly perpetuate this view amongst parents and other people interested in the issues raised.

The potential to address these challenging issues within the NCEA regime, and current constraints to doing so, are discussed in this section.

Creating multiple pathways through the senior secondary school

The intention when the NQF and the NCEA were designed was to create a flexible, seamless qualifications system that could provide recognition for the specific learning of individual students – it would report on what they know and can do. This overarching purpose is in tension with the purpose of the previous examination system that acted as a comparative measure to sort students by "academic ability" and determined access to further education and employment opportunities.

This sorting system is so entrenched that it is hard to think past it and envision new possibilities that do not seem like "cheating" for students who would have been ranked down and counted out in a norm-referenced assessment regime. We begin this section by taking up the challenge of rethinking some assumptions about the purposes for learning, with associated implications for what might be assessed and credentialled, and how that assessment might best be carried out.

Purposes for learning and the potential for different sorts of outcomes

Traditionally, assessment for qualifications in the senior secondary school has sorted students into appropriate future pathways and controlled access to the limited resources available for university education by restricting entry to those school-leavers considered most likely to succeed. The sorting process has relied on judgments made primarily in curriculum areas considered to provide "academic rigour" – areas privileged and protected within the traditional-discipline structures of the universities (Bernstein, 1971).

This type of influence can still be seen at work in some NCEA-related changes. In mathematics, HODs strategically created more time for their "academic" students to learn *algebra* because they

© NZCER

saw this topic as an important "foundation" for making further progress in this subject area. And one mathematics HOD, looking ahead, worried that able students would be disadvantaged at the scholarship level if they did not keep up their learning in *all* the areas assessed by the full suite of achievement standards on offer. The "sorting" function of assessment for qualifications, which understandably generates the anxiety that underpins these types of comments, is likely to ensure the perpetuation of full "curriculum coverage" in traditional subject areas.

Rethinking outcomes that might be credentialled

Traditional views of the purposes of schooling are under attack on several fronts. Internationally, science educators, for example, have questioned whether compulsory science learning of all school students would be better directed to a wider range of outcomes, suggesting that present teaching practices are carried out as if all students were being prepared for a future career in science (Millar and Osborne, 1998). *Science in the New Zealand Curriculum* allows for a range of outcomes to be addressed (Hipkins and Barker, 2002), and schools are free to locally-redesign courses as they see fit. However, we saw little evidence that traditional-discipline science courses have changed from pre-NCEA days (*see* Section Seven).

Another argument is that the traditional-disciplines are out of step with rapid changes in the nature of knowledge in the "knowledge societies" that have been created by the move to a global economy and the associated communications revolution provided by the Internet (Gilbert, 2003). In these views, knowledge is more fluid and mobile – more akin to a type of energy than to a fixed commodity to be acquired in the finite chunks implied by terms such as "curriculum coverage". Those who use these ideas to critique the current school curriculum suggest that school learning should be more attuned to real contexts of life and work outside school and should build on students' interests in ways that foster their creativity and desire for "lifelong learning" (Bryce and Withers, 2003). A consequence would be that traditional-discipline boundaries would need to be broken down with teachers co-operating to work across their discipline strength.This last point is important. "Knowledge society" arguments are sometimes read to mean that content doesn't matter any more. We do not agree. The questions to debate are what knowledge, taught in what ways, for what outcome, and in what contexts?

This type of future-focused argument for curriculum reform challenges everyone involved in education – leaders, teachers, parents, and students – to rethink assumptions about the nature of knowledge, and of learning. We have briefly outlined possibilities for using the various NCEA instruments to create locally-redesigned courses in any cross-discipline combinations that schools wish to design. However, we have also seen that such courses are as yet, exceptions (*see* Sections Seven–Nine), with the less traditional curriculum areas of the arts and technology leading the way. In the core of the curriculum – the "solid foundation" of compulsory English, mathematics, and science at Year 11 – most students are currently still more likely to learn in traditional-discipline options, and to be mainly assessed against standards for traditional knowledge outcomes.

© NZCER

It may be that the students are ahead of the adults (teachers, parents, curriculum policy-makers) in recognising the need for such courses. Sections Eight and Nine have documented the increasing popularity of subjects in the arts and technology areas, notwithstanding tensions such as "intellectualisation" in technology and the lack of status afforded the arts in the school curriculum. For example, the choice of drama – one of the newest curriculum subjects – was linked by almost all the Year 11 students who chose it to expectations of interest, challenge, life skills, *and* future career. Such unanimity of responses to a range of choice factors was rare.

Rethinking beyond school transitions

There is growing interest in the *many possible* pathways for transition beyond school (to work, further study, or training). National transition-focused programmes such as STAR, Gateway, and local projects such as schools-tertiary provider curriculum alignment ventures and community-focused Mayors' Taskforce initiatives highlight demands for school-to-world relevance, and greater demand for schools to engage students in meaningful work. The interest in transition may also signal the growing importance of the relationship between schools and other institutions as semi-skilled jobs become more scarce, but the skilled service sector grows in importance, and a shortage of qualified trades people starts to bite. Building skills and confidence for a wide range of work-related tertiary education or on-the-job training is an important outcome of school education for many students. In late January 2004 Andrew West, the chairman of the Tertiary Education Commission issued a press release to provoke discussion about parents' and students' preoccupation with university study when there is a skills shortage in trades and technical areas.

It could be seen as a concern that a minority of students in contextually-focused options of core curriculum subjects link their expectations of enjoyment to expectations that their choices will be "easy" (*see* Sections Ten and Eleven). However, such expectations must be weighed against the strong possibility that the previous "learning careers" of these students have shaped their responses so that they protect their self-esteem as learners by limiting the risks they are prepared to take (Ecclestone and Pryor, 2003). In this initially unpromising context, as one teacher observed "success breeds success" (*see* Section Five). Students who continue to participate are students who have at least a chance of continuing to learn and contribute in school and beyond (Perry and Allard, 2003).

We have noted the varied structure of contextually-focused courses designed to meet student learning needs in different local contexts (*see* Section Seven) and the growing success and confidence of some learners who take these courses (*see* Section Five). Outcomes for learning that are relevant in school-to-work contexts do indeed appear to be gradually opening up within the NCEA assessment regime.

Constraints to rethinking the traditional curriculum

Upon completion of their recent systematic review of future-focused research on teaching and learning, a team of Massey University researchers concluded that:

 © NZCER

> Most of the policy platforms, frameworks and research programmes reviewed have adopted a conventional approach towards envisioning the future, generally reflecting a lack of foresight and imagination, an absence of non-Western views, lack of critique of current trends, and an *unquestioning endorsement of the status quo* (Codd et al., 2002, p. ix, emphasis added).

As Bernstein noted more than thirty years ago, there is a strong impetus to protect the "academic" status quo in the curriculum. Our analysis of the traditional-discipline subjects has shown that this influence is alive and well within the NCEA regime. Some will find this reassuring. However, those who are interested in the implications of future trends research that we have briefly outlined above may wish to reflect on some issues that seemed to us to act as constraints to the types of changes that are now achievable – at least in principle.

We have noted the relatively common perception that credits are harder to gain from achievement standards than from unit standards, and that credits from externally assessed achievement standards are harder to gain than those from internally assessed ones. Inconsistencies in some judgments made in the early stages of the NCEA implementation have undoubtedly contributed to this perception, as has the practice of constructing "grade averages" using only results from achievement standards. A shared view of standards will inevitably take time to develop. However, the Orwellian view that "some credits are more equal than others" could well be acting to prevent the more widespread adoption of locally-redesigned courses that are assessed for qualifications, especially where unit standards can assess outcomes that the current collection of achievement standards cannot. Of course it would be possible to design different sorts of achievement standards, should the need to do so become a priority.

Kress, Jewitt, Ogborn, and Tsatarelis (2001) note that external examinations can only test what can be put down on paper – that is, they have a "talk bias". These researchers' multi-modal analysis of teaching emphasises the increasing importance of multiple modes of communication, especially visual modes. They discuss the need for students' learning experiences to integrate "ways of saying" with "ways of seeing" and they note that assessments are inevitably changed in nature when they are switched between different modes. This type of argument underscores the need for wider adoption of methods of assessment that are administered close to the contexts of learning – that is, not mainly in end-of-year formal national examinations.

It seems to us that the relative status of achievement and unit standards, and of internally managed and externally managed assessment-for-qualifications, is an issue that NZQA and the MOE need to address with some urgency.

Navigating amongst multiple pathways

In a discussion of current policy and practice around transitions from secondary school to further study or work, Vaughan (2003) points out that adolescents are increasingly being "responsibilised" into making their own choices – with potentially far-reaching consequences for

© NZCER

their future pathways. They are required to choose their own pathway (at least within the structural constraints that exist) and are deemed responsible for the consequences. However, adolescents bring their own sense of self to their decision-making, and they may or may not frame their choices and possibilities in the same way as their parents, teachers, and/or policy-makers would do. That is, they are active "navigators" of their pathways, not passive travellers (Furlong and Cartmel, 1997; Vaughan, 2003).

Students' responses to the subject-choice questionnaires (*see* Sections Ten–Thirteen) show that they are concerned with making good decisions for their futures. Many of them link their choices about options in the subjects at the core of the school curriculum (English, mathematics, and to a lesser extent, science) and their future plans, especially future study and/or future career. These links are also made for optional subjects.

Some 2003 students were acting to meet their own needs as *they* saw them by avoiding some assessments, strategically selecting the unit and achievement standards in which they would be assessed. Sometimes they perceived credits would be "easier" to get but sometimes they wanted to capitalise on areas of personal strength or interest. For at least some students, it seemed that "any credits would do" as long as they reached the total needed to gain an NCEA award. There are dilemmas for teachers here. Many of them use available credits as "carrots" to encourage students to choose their courses and then to actively participate in leaning. However, they are also concerned about strategic choices that can help students keep future pathways open and if they "cover all bases" by being assessed in everything offered in all their courses students may well end up with far more credits than they actually need. In Section Six we noted that this is one of the complex and sometimes contradictory issues that accompanies the debate about whether individual courses should offer a reduced credit total. Both the issue of actual credit reduction and students' decisions to reduce their individual assessment loads bear further investigation in the 2004 data gathering round.

Parents and pathways

Comments made in the 6 *Learning Curves* schools suggest that parental understanding of the NCEA is growing (*see* Section Six) although most principals feel there is some way to go and other commentators, including some principals, claim parents are "bewildered" (Welsh, 2004).

Responses to the student surveys indicated that parents are the people most likely to influence students' subject choices (*see* Sections Ten-Twelve). It is important that they are well informed if they are to help their children make good choices within the multiplicity of learning pathways that are now opening up. Parity of esteem for the various types of assessment options can and is being used to convince some parents that contextually-focused courses are a worthwhile choice where teachers see these are more appropriate for learners' needs.

However, the NCEA is also challenging other parents to rethink the learning possibilities open to their children. Drama, so popular with the students themselves, is thought by 19 percent of them to be a choice with which their parents are unhappy (*see* Section Twelve) although these students

© NZCER

have obviously gone ahead with their choice nonetheless. While we do not know *why* the students thought that, comments made by the arts HODs suggest that parents' desire for students to stick within the "rigour" of the traditional curriculum disciplines probably underlies this response. Not only do parents need to get grips to with the structure of the NCEA and all the associated choices for their children, they also need opportunities to engage in informed discussions about the purposes of learning and potential outcomes for schooling for the world of the future, as outlined above.

Many parents aspire to see their children attend university as a stepping stone to future opportunities and social status. However, the Tertiary Education Commission has recently cautioned against unintended consequences of this way of thinking. There are resourcing issues and universities are the keepers of status and privilege for their discipline areas (Bernstein, 1971). Not all students will be able to get beyond first year courses if the "sorting" function of assessment merely shifts from schools to universities and we have already noted the prospect that there could be a shortage of workers with other types of skills and knowledge. In this context, an international study of reforms similar in intent to the NCEA, and of the role of some parents in directing their children's pathways beyond school, is food for thought.

The controversy over league tables and non-reporting of internally assessed results for students who did not achieve a standard (*see* Section Six) is an area where personal/social issues are in tension. Welch (2004) describes this practice as a "scandal" because it distorts league tables which he says are essential so that parents can make informed choices of schools. This is itself a contested view. Research shows that schools vary from year to year and performance levels fluctuate with variation in student cohorts (Linn et al., 2002). Research also shows that teachers have more impact on student performance than do schools (Rowe, 1999). The teachers who chose not to report had the interests of individual students and their families in mind (*see* Section Six). And as another education commentator points out, the argument for reporting all results regardless of success has interesting implications:

> This discussion was noticeable for the fervour with which some educationalists argued that we should make explicit what students could *not* do as well as what they can do. This is a novel suggestion yet to be undertaken by any degree programme and, dare we say, the Cambridge examinations. I failed Stage 1 History in 1964 – who cares now? (I passed it in 1965 though.) (Middleton, 2004).

In this situation the personal (reporting individual students achievements) is not compatible with the social (using NCEA achievements to hold schools accountable for their work).

Creating space for teachers to think through these issues

A number of the teachers we spoke with are clearly worried about their capacity to think about these complex issues within the current qualifications regime and climate of teaching in schools. Many HODs commented on the continuing stress generated by the huge HOD workload

© NZCER

associated with the NCEA implementation. One told us that “no one wants to do it” [be an HOD]. A recently appointed HOD told us that there had been just one external applicant for the position in the school and a long-serving HOD told us she was actively seeking promotion to a senior management role because she thought it would be less stressful. Our interviews created a direct opportunity for such concerns to be aired. We note that a recent Education Review Office report found that workload issues were now causing less concern than in the early stages of the implementation (Education Review Office, 2004). However, their findings came out of an open-ended question that probed problematic activities/initiatives regarding NCEA implementation.

While HODs see exciting possibilities within the initiative, they also see limits to their own abilities to think creatively and carry out all the HOD administrative tasks associated with the implementation, all the while maintaining their own teaching programme. One HOD reflected that “you need inspired people to see inspired pathways” but worried that teachers are not taking up middle management positions because of the workload associated with them. In contrast, another HOD told us the mathematics team at the school was “just humming” now, albeit after the retirement and replacement of some more traditional teachers.

Long-term consequences of the NCEA remain to be seen. However, this research indicates there is potential for a continuation of the academic/vocational divide which appears to be occurring under the auspices of meeting student learning needs. Nonetheless, there is also its counterweight: a potential for genuine thoughtfulness about meeting student needs through creative course design, about which a number of HODs commented to us. It seems reasonable to suggest that teachers need the capacity and support to work in ways to better understand and identify, rather than simply meet, assumed student learning needs. This means creating space for teachers to consider, critique, be imaginative, not only about the NCEA, but also about the underlying issues of schooling purposes.

© NZCER

References

Australian Council for Educational Research. (2002). *Report on the New Zealand National Curriculum* (Report commissioned for the New Zealand Curriculum Stocktake). Wellington: Ministry of Education.

Beals, F., Hipkins, R., Cameron, M., & Watson, S. (2003). *An evaluation of professional development to support The Arts in the New Zealand Curriculum*. Wellington: Ministry of Education.

Bernstein, B. (1971). *Class, codes and control volume 1: Theoretical studies towards a sociology of language*. London: Routledge and Keegan Paul.

Boaler, J., & Greeno, J. (2000). Identity, agency and knowing in mathematics worlds. In J. Boaler (Ed.), *Multiple perspectives on mathematics teaching and learning*. Westport: Ablex Publishing.

Boyd, S., McDowall, S., & Cooper, G. (2002). *Innovative Pathways: Phase One Report 2002*. Wellington: New Zealand Council for Educational Research.

Bryce, J., & Withers, G. (2003). *Engaging secondary school students in lifelong learning*. Melbourne: Australian Council for Educational Research.

Chamberlain, J. (2003, October). What have we done to our kids? The NCEA maze. *North and South, 211*, 36–49.

Codd, J., Brown, M., Clark, J., McPherson, J., O'Neill, H., O'Neill, J., Waitere–Ang, H., & Zepke, N. (2002). *Review of future-focused research on teaching and learning*. Wellington: Ministry of Education.

Delors, J. (1996). *Learning: The Treasure within*. New York: Report to UNESCO of the International Commission of Education for the Twenty-first Century.

Ecclestone, K., & Pryor, J. (2003). 'Learning careers' or 'assesment careers'? The impact of assessment systems on learning. *British Educational Research Journal, 29* (4), 471–488.

Education Review Office. (2001). *The New Zealand Curriculum: An ERO Perspective* (National Education Evaluation Report April). Wellington: Education Review Office.

Education Review Office. (2004). *Progress of NCEA Levels 1 and 2, and readiness of schools to implement level 3*. Wellington: Educaton Review Office.

Feltham, S. (2004). Raise uni entrance standards to make students work harder – principal. *NZ Education Review*, pp. February 11–17, p. 13.

Furlong, A., & Cartmel, F. (1997). *Young People and Social Change: Individualization and risk in late modernity*. Buckingham: Open University Press.

Gaskell, P. (1992). Authentic science and school science. *International Journal of Science Education, 14* (3), 265–272.

Gilbert, J. (2003). "New" knowledges and "new" ways of knowing: implications and opportunities. In B. Webber (Ed.), *Educating for the 21st. century: rethinking the educational outcomes we want for young New Zealanders – NZCER Conference proceedings 2003* (pp. 15–31). Wellington: New Zealand Council for Educational Research.

Higgins, J. (2002). Young People and Transitions Policies in New Zealand. *Social Policy Journal of New Zealand, 18*, 44–61.

Hipkins, R., & Barker, M. (2002). Science in the New Zealand Curriculum: Present potential and future possibilities. *New Zealand Science Teacher, 50*.

Hipkins, R., & Neill, A. (in press). *Shifting Balances: The Impact of Level 1 NCEA on the Teaching of Mathematics and Science*.

Hipkins, R., & Vaughan, K. (2002a). *From Cabbages to Kings: A first report*. Wellington: New Zealand Council for Educational Research.

© NZCER

Hipkins, R., & Vaughan, K. (2002b, 28–30 November 2002). *Well I know I need English and mathematics*. Paper presented at the Pushing the Boundaries: the heightened role of career planning in knowledge societies. An International Conference for the Careers Industry., Wellington.

Hurd, P. (1997). *Inventing Science Education for the New Millennium*. New York: Teachers College Press.

Kress, G., Jewitt, C., Ogborn, J., & Tsatsarelis, C. (2001). *Multimodal teaching and learning: the rhetorics of the science classroom*. London and New York: Continuum.

Leigh-Lancaster, D. (2002). *Systems, values and mathematics education*. Paper presented at the Monash Values Conference, Monash University, Melbourne.

Linn, R., Baker, E., & Betebenner, D. (2002). Accountability systems: implications of the No Child Left Behind act of 2001. *Educational Researcher, 31* (6), 3–16.

McGee, C., Jones, A., Cowie, B., Hill, M., Miller, T., Harlow, A., & MacKenzie, K. (2003). *Curriculum Stocktake, National School Sampling Study. Teachers' experiences in curriculum implementation: English, Languages, Science and Social Studies*. Wellington: Ministry of Education.

Middleton, S. (2004). No room for martyrs. *NZ Education Review,* pp. February 4–10, 16.

Millar, R., & Osborne, J. F. (Eds.). (1998). *Beyond 2000: Science Education for the Future*. London: Kings College.

Minister of Education. (2002). *Update on NCEA workload reporting*.

Ministry of Education. (1993). *Science in the New Zealand Curriculum*. Wellington: Learning Media.

Ministry of Education. (2000). *The Arts in the New Zealand Curriculum*. Wellington: Learning Media Limited.

Ministry of Education. (2001a). Archived National Certificate of Educational Achievement: Frequently Asked Questions. http://www.minedu.govt.nz/web/document/document_page.cfm?id=3173

Ministry of Education. (2001b). Summary of the New Zealand Curriculum Framework. Ministry of Education.
http://www.minedu.govt.nz/web/document/document_page.cfm?id=3561&p=1003.1004

New Zealand Qualifications Authority. (2002). *Progress on initiatives to support the implementation of the NCEA*.

New Zealand Education Gazette. (2003, 7 April). Pathway to industry. *New Zealand Education Gazette, 82*.

New Zealand Treasury. (2003). Budget 2003: Budget Speech. The New Zealand Treasury. www.treasury.govt.nz/budget2003

Parker, L., & Rennie, L. (1995). Beware of the curriculum dog. *EQ, Spring,* 50–53.

Perry, C., & Allard, A. (2003). Making the connections: transition experiences of first-year education students. *Journal of Educational Enquiry, 4* (2), 74–89.

Reay, D. (1998). Setting the agenda: the growing impact of market forces on pupil grouping in British secondary schooling. *Journal of Curriculum Studies, 30* (5), 545–558.

Richardson, A. (2004). Anger as schools told not to record students who fail. *Sunday Star Times,* pp. A3.

Rowe, K. (1999). *Assessment, performance indicators, 'league tables', 'value-added' measures and school effectiveness?Consider the issues and 'let's get real!'* Paper presented at the Paper given at AARE/NZARE conference, Melbourne, December.

Rudolph, J. (2002). Portraying epistemology: school science in historical context. *Science Education, 87* (1), 64–79.

The New Zealand Herald. (2002, 16 September). Education's technological revolution. *The New Zealand Herald*.

Vaughan, K. (2003, 8 August). *Changing Lanes: Youth People Making Sense of Pathways*. Paper presented at the Educating for the 21st Century, NZCER Annual Conference, Quality Hotel, Wellington.

Vaughan, K., & Boyd, S. (in press). Pathways, Junctions, and Pitstops: Youth Transition Policy in New Zealand. In N. Bagnall (Ed.), *Youth Transition in a Globalised Marketplace*. New York: Nova Science Publishers, Inc.

Vaughan, K., & Kenneally, N. (2003). *A Constellation of Prospects: A Review of the Secondary-Tertiary Alignment Resource (STAR)*. Wellington: Ministry of Education.

© NZCER

Welch, D. (2004). School for scandal. *New Zealand Listener*, *192*, 20–24.

West, A. (2004). Secondary School Students Urged to Carefully Consider Study and Career Options as Skill Shortages Climb. Press Release by Tertiary Education Commission, 26th January.

© NZCER

© NZCER

Appendix A: Learning Curves: Year 11 Student Questionnaire 2003

NEW ZEALAND COUNCIL FOR EDUCATIONAL RESEARCH
TE RŪNANGA O AOTEAROA MŌ TE RANGAHAU I TE MĀTAURANGA

School:

ID:_________

Section One

1. On the list below, please circle the code numbers of the subjects you are taking this year.

Code	Subject
1a	English
1b	English NQF
2b	Mathematics Practical
2b	Mathematics NQF
2a	Mathematics
38b	Information Mgmt NQF
38	Information Management
25	Graphics
15a	Accounting
15b	Accounting NQF
16	Economics
19	French
32	Home Economics
21	Japanese
10	Art
80	Humanities
7	Geography
17	Maori
14	Music
26a	Materials Technology (Wood)
27	Materials Technology (Metal)
30	Materials Technology (Textiles)
34	Physical Education
23	Samoan
3a	Science
3b	Science NQF
41b	Transition NQF

The following section (section two) is repeated six times – once for every possible subject you are taking this year. So if, for example, you are taking *English*, please answer all the questions in section two in relation to *English*. Then answer all the same questions in the next repeat sequence for another of your subjects, and so on.

© NZCER

Section Two

2. I chose this subject **(write the name of the subject here: ________________________________)** because *(Tick all the boxes and spaces in the tables that apply.)*

a) It fitted my timetable

b) I thought it would give me easy NCEA credits

c) I expected to enjoy it *[Please answer the box below if you ticked c]*

Reasons you expected to enjoy it	Tick all that apply
a) I like the teacher	
b) My friends are in this class	
c) I'm good at it	
d) It's easy	
e) It's interesting	
f) It's challenging	
g) I enjoy the practical aspects	

d) I need it for my future plans *[Please answer the box below if you ticked d]*

Why do you need it?	Tick all that apply
a) For the job I want to do	
b) For my future study	
c) For my travel plans	
d) For my personal life skills	

e) Talking with other people encouraged me to consider it *[Please answer the box below if you ticked e and also question f]*

Who helped you to choose this subject?	Tick all that apply
a) Parent(s)	
b) Teacher	
c) Dean	
d) Careers teacher	
e) Someone else (*say who in the tick box*)	

f) Why do you think they wanted you to choose this subject?

3. How happy are you with this subject choice this year? *(Tick one box only)*
1) Very happy 2) Fairly happy 3) Just okay 4) A bit unhappy 5) Very unhappy

4. How happy do you think your parent(s)/caregiver(s) are of this subject choice this year?
1) Very happy 2) Fairly happy 3) Just okay 4) A bit unhappy 5) Very unhappy

5. If you yourself are not happy, what change would help make you happier?

Changes that could make you happier	Tick all that apply
a) changing to another subject altogether	
b) changing to another teacher	
c) changing classes to be with my friends	
d) doing more practical (hands-on) work	
e) doing less practical (hands-on) work	
f) having more interesting learning activities	
g) having less assessment pressure	
h) getting more support from teachers for my learning in class	
i) having more obvious links to everyday things that interest me	
j) Other *(please specify)*	

© NZCER

Section Two (Your 2nd subject)

2. I chose this subject **(write the name of the subject here: ______________________________)** because *(Tick all the boxes and spaces in the tables that apply.)*

a) It fitted my timetable

b) I thought it would give me easy NCEA credits

c) I expected to enjoy it *[Please answer the box below if you ticked c]*

Reasons you expected to enjoy it	**Tick all that apply**
a) I like the teacher	
b) My friends are in this class	
c) I'm good at it	
d) It's easy	
e) It's interesting	
f) It's challenging	
g) I enjoy the practical aspects	

d) I need it for my future plans *[Please answer the box below if you ticked d]*

Why do you need it?	**Tick all that apply**
a) For the job I want to do	
b) For my future study	
c) For my travel plans	
d) For my personal life skills	

e) Talking with other people encouraged me to consider it *[Please answer the box below if you ticked e and also question f.]*

Who helped you to choose this subject?	**Tick all that apply**
a) Parent(s)	
b) Teacher	
c) Dean	
d) Careers teacher	
e) Someone else (say who in the tick box)	

f) Why do you think they wanted you to choose this subject?

3. How happy are you with this subject choice this year? *(Tick one box only)*
1) Completely happy 2) Fairly happy 3) Not very happy 4) A bit unhappy 5) Very unhappy

4. How happy do you think your parent(s)/caregiver(s) are of this subject choice this year?
1) Very happy 2) Quite happy 3) Just okay 4) A bit unhappy
5) Very unhappy

5. If you yourself are not happy, what change would help make you happier?

Changes that could make you happier	**Tick all that apply**
a) changing to another subject altogether	
b) changing to another teacher	
c) changing classes to be with my friends	
d) doing more practical (hands-on) work	
e) doing less practical (hands-on) work	
f) having more interesting learning activities	
g) having less assessment pressure	
h) getting more support from teachers for my learning in class	
i) having more obvious links to everyday things that interest me	
j) Other *(please specify)*	

© NZCER

Section Two (Your 3rd subject)

2. I chose this subject **(write the name of the subject here: ________________________________)** because *(Tick all the boxes and spaces in the tables that apply.)*

a) It fitted my timetable

b) I thought it would give me easy NCEA credits

c) I expected to enjoy it *[Please answer the box below if you ticked c]*

Reasons you expected to enjoy it	**Tick all that apply**
a) I like the teacher	
b) My friends are in this class	
c) I'm good at it	
d) It's easy	
e) It's interesting	
f) It's challenging	
g) I enjoy the practical aspects	

d) I need it for my future plans *[Please answer the box below if you ticked d]*

Why do you need it?	**Tick all that apply**
a) For the job I want to do	
b) For my future study	
c) For my travel plans	
d) For my personal life skills	

e) Talking with other people encouraged me to consider it *[Please answer the box below if you ticked e and also question f.]*

Who helped you to choose this subject?	**Tick all that apply**
a) Parent(s)	
b) Teacher	
c) Dean	
d) Careers teacher	
e) Someone else *(say who in the tick)*	

f) Why do you think they wanted you to choose this subject?

3. How happy are you with this subject choice this year? *(Tick one box only)*
1) Very happy 2) Fairly happy 3) Just okay 4) A bit unhappy 5) Very unhappy

4. How happy do you think your parent(s)/caregiver(s) are of this subject choice this year?
1) Very happy 2) Fairly happy 3) Just okay 4) A bit unhappy 5) Very unhappy

5. If you yourself are not happy, what change would help make you happier?

Changes that could make you happier	**Tick all that apply**
a) changing to another subject altogether	
b) changing to another teacher	
c) changing classes to be with my friends	
d) doing more practical (hands-on) work	
e) doing less practical (hands-on) work	
f) having more interesting learning activities	
g) having less assessment pressure	
h) getting more support from teachers for my learning in class	
i) having more obvious links to everyday things that interest me	
j) Other *(please specify)*	

© NZCER

Section Two (Your 4th subject)

2. I chose this subject **(write the name of the subject here: ________________________________)** because *(Tick all the boxes and spaces in the tables that apply.)*

a) It fitted my timetable

b) I thought it would give me easy NCEA credits

c) I expected to enjoy it *[Please answer the box below if you ticked c]*

Reasons you expected to enjoy it	**Tick all that apply**
a) I like the teacher	
b) My friends are in this class	
c) I'm good at it	
d) It's easy	
e) It's interesting	
f) It's challenging	
g) I enjoy the practical aspects	

d) I need it for my future plans *[Please answer the box below if you ticked d]*

Why do you need it?	**Tick all that apply**
a) For the job I want to do	
b) For my future study	
c) For my travel plans	
d) For my personal life skills	

e) Talking with other people encouraged me to consider it *[Please answer the box below if you ticked e and also question f.]*

Who helped you to choose this subject?	**Tick all that apply**
a) Parent(s)	
b) Teacher	
c) Dean	
d) Careers teacher	
e) Someone else *(say who in the tick)*	

f) Why do you think they wanted you to choose this subject?

3. How happy are you with this subject choice this year? *(Tick one box only)*
1) Very happy 2) Fairly happy 3) Just okay 4) A bit unhappy 5) Very unhappy

4. How happy do you think your parent(s)/caregiver(s) are of this subject choice this year?
1) Very happy 2) Fairly happy 3) Just okay 4) A bit unhappy 5) Very unhappy

5. If you yourself are not happy, what change would help make you happier?

Changes that could make you happier	**Tick all that apply**
a) changing to another subject altogether	
b) changing to another teacher	
c) changing classes to be with my friends	
d) doing more practical (hands-on) work	
e) doing less practical (hands-on) work	
f) having more interesting learning activities	
g) having less assessment pressure	
h) getting more support from teachers for my learning in class	
i) having more obvious links to everyday things that interest me	
j) Other *(please specify)*	

© NZCER

Section Two (Your 5th subject)

2. I chose this subject **(write the name of the subject here: _________________________________)** because *(Tick all the boxes and spaces in the tables that apply.)*

a) It fitted my timetable

b) I thought it would give me easy NCEA credits

c) I expected to enjoy it *[Please answer the box below if you ticked c]*

Reasons you expected to enjoy it	**Tick all that apply**
a) I like the teacher	
b) My friends are in this class	
c) I'm good at it	
d) It's easy	
e) It's interesting	
f) It's challenging	
g) I enjoy the practical aspects	

d) I need it for my future plans *[Please answer the box below if you ticked d]*

Why do you need it?	**Tick all that apply**
a) For the job I want to do	
b) For my future study	
c) For my travel plans	
d) For my personal life skills	

e) Talking with other people encouraged me to consider it *[Please answer the box below if you ticked e and also question f.]*

Who helped you to choose this subject?	**Tick all that apply**
a) Parent(s)	
b) Teacher	
c) Dean	
d) Careers teacher	
e) Someone else *(say who in the tick)*	

f) Why do you think they wanted you to choose this subject?

3. How happy are you with this subject choice this year? *(Tick one box only)*
1) Very happy 2) Fairly happy 3) Just okay 4) A bit unhappy 5) Very unhappy

4. How happy do you think your parent(s)/caregiver(s) are of this subject choice this year?
1) Very happy 2) Fairly happy 3) Just okay 4) A bit unhappy 5) Very unhappy

5. If you yourself are not happy, what change would help make you happier?

Changes that could make you happier	**Tick all that apply**
a) changing to another subject altogether	
b) changing to another teacher	
c) changing classes to be with my friends	
d) doing more practical (hands-on) work	
e) doing less practical (hands-on) work	
f) having more interesting learning activities	
g) having less assessment pressure	
h) getting more support from teachers for my learning in class	
i) having more obvious links to everyday things that interest me	
j) Other *(please specify)*	

© NZCER

Section Two (Your 6th subject)

2. I chose this subject **(write the name of the subject here: ________________________________)** because *(Tick all the boxes and spaces in the tables that apply.)*

a) It fitted my timetable

b) I thought it would give me easy NCEA credits

c) I expected to enjoy it *[Please answer the box below if you ticked c]*

Reasons you expected to enjoy it	**Tick all that apply**
a) I like the teacher	
b) My friends are in this class	
c) I'm good at it	
d) It's easy	
e) It's interesting	
f) It's challenging	
g) I enjoy the practical aspects	

d) I need it for my future plans *[Please answer the box below if you ticked d]*

Why do you need it?	**Tick all that apply**
a) For the job I want to do	
b) For my future study	
c) For my travel plans	
d) For my personal life skills	

e) Talking with other people encouraged me to consider it *[Please answer the box below if you ticked e and also question f.]*

Who helped you to choose this subject?	**Tick all that apply**
a) Parent(s)	
b) Teacher	
c) Dean	
d) Careers teacher	
e) Someone else *(say who in the tick)*	

f) Why do you think they wanted you to choose this subject?

3. How happy are you with this subject choice this year? *(Tick one box only)*
1) Very happy 2) Fairly happy 3) Just okay 4) A bit unhappy 5) Very unhappy

4. How happy do you think your parent(s)/caregiver(s) are of this subject choice this year?
1) Very happy 2) Fairly happy 3) Just okay 4) A bit unhappy 5) Very unhappy

5. If you yourself are not happy, what change would help make you happier?

Changes that could make you happier	**Tick all that apply**
a) changing to another subject altogether	
b) changing to another teacher	
c) changing classes to be with my friends	
d) doing more practical (hands-on) work	
e) doing less practical (hands-on) work	
f) having more interesting learning activities	
g) having less assessment pressure	
h) getting more support from teachers for my learning in class	
i) having more obvious links to everyday things that interest me	
j) Other *(please specify)*	

© NZCER

Section Three

6a. Were there any subjects that you wanted to take but could not?

a) Yes b) No

If you answered '**Yes' above**, please circle the code(s) of the subject(s) you wanted to take in the box below.
If you answered '**No'**, please GO TO Question 7.

Code	Subject
1a	English
1b	English NQF
2b	Mathematics Practical
2b	Mathematics NQF
2a	Mathematics
38b	Information Mgmt NQF
38	Information Management
25	Graphics
15a	Accounting
15b	Accounting NQF
16	Economics
19	French
32	Home Economics
21	Japanese
10	Art
80	Humanities
7	Geography
17	Maori
14	Music
26a	Materials Technology (Wood)
27	Materials Technology (Metal)
30	Materials Technology (Textiles)
34	Physical Education
23	Samoan
3a	Science
3b	Science NQF
41b	Transition NQF

6b. If you have circled any subjects above, what were the reasons why you could not take the subject(s)?

a) Timetable clash

b) Was not allowed *[Please answer the box below if you ticked b]*

Reasons you were not allowed	Tick all that apply
a) Have not done it before	
b) Did not get good marks	
c) Class was full	
d) Past poor behaviour	

c) Parents did not want me to take the subject

7. Were there any subjects you wanted to take but couldn't because this school does not offer them.

a) No

b) Yes

c) If Yes, please say what subject(s) ____

© NZCER

d) Why did you want to take these subjects? d1 2 3

____ 4 5 6

____ 7 8 9

____

8. Are there any other comments you would like to add about the subjects you have chosen? 1 2 3

____ 4 5 6

____ 7 8 9

____

9. Later this year, we would like to interview some students about their subject choices. Are you willing to take part in a short interview? (circle one)

a) Yes b) No

If you answered YES, please give us some contact information:

First Name: ______________________________________
Last Name: ______________________________________
Which is your form class? ______________________________________
What is your address: ______________________________________
____

What is your telephone number: ( ) __________________________

Thank you very much for your time and for your thoughts about your subject choices and future plans.
Please put your completed questionnaire in the envelope provided
at the front of the room.

© NZCER