



MINISTRY OF EDUCATION

Te Tāhuhu o te Mātauranga

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School Staffing Improvements:
**Evaluation of the impact of additional teaching staff provided
through the School Staffing Review**

Report to the Ministry of Education

Education Review Office

RESEARCH DIVISION

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School Staffing Improvements: Evaluation of the impact of additional teaching staff provided through the School Staffing Review

Ministry of Education Research Division Wellington

EXTERNAL RESEARCH CONTRACT WITH:

Education Review Office

Te Tari Arotake Matauranga

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Abstract

Since the beginning of 2001, the Government has been implementing a staged plan based on the recommendations of the report of the School Staffing Review Group (SSRG). By 2004, approximately 2,090 additional full-time equivalent teaching positions were provided to schools. By 2007 this additional entitlement will have risen to 3,700, signalling the full implementation of the plan.

The first stage of a proposed evaluation of the impact of the additional teaching staff on student outcomes has been completed. It has evaluated the extent to which schools make decisions about using additional teaching resource for activities that are likely to be effective in improving student outcomes. It has also examined the extent to which schools have effective mechanisms in place to evaluate the impact of these activities. This evaluation has been carried out by the Education Review Office under contract to the Ministry of Education.

Executive summary

This evaluation was carried out by the Education Review Office under contract to the Ministry of Education in 2004.

The School Staffing Review Group reported to the Government in February 2001. The recommendations of the Review Group targeted two key goals: to improve the capacity of schools to deliver quality education; and to alleviate problems associated with teacher workload. The Government has responded to these recommendations by developing the School Staffing Improvement Plan, known as School Staffing Improvements. By 2004, approximately 2,090 additional teaching staff, of an intended total of 3,700, had been made available to schools as part of this plan.

The Ministry of Education has recognised that there are significant difficulties in evaluating the impact of the additional teacher resource on student outcomes. The lack of parameters around the use of the resource, and the wide range of options open to schools, create a major challenge in evaluation¹ These issues led to a phased approach being proposed, with phase one providing indicators for a more detailed second phase of evaluation.

A theory-based approach (see methodology) was used for this evaluation in order to address the challenge of evaluating across multiple contexts.

This study is the first stage of a proposed evaluation to measure the impact of School Staffing Improvements on student outcomes. In particular, this stage of the evaluation has focused on the decisions schools make about using their additional teaching staff entitlement, and the way in which they are measuring the effectiveness of the way in which the entitlement has been used. One hundred and ten schools, across all school types, were included in the sample for this evaluation.

What are schools using the additional teaching staff entitlement for and why?

In many schools, the principal was the only person in the school community who had any knowledge of School Staffing Improvements or the additional teaching staff entitlement allocated to their school. In only 35 percent of schools were many or all of the board of trustees aware of School Staffing Improvements, and in only 32 percent did all or many trustees have knowledge of how the additional teaching staff entitlement was allocated in their school. In almost half of all schools in this study (46 percent) no teachers were aware of School Staffing Improvements and a majority (70 percent) were not aware of how the entitlement was being used at the school level.

The employment of extra staff was the most common allocation of the additional teaching staff entitlement (38 percent). Some schools increased the hours of their part-time staff (15 percent), while others used the entitlement to resource staffing previously charged to operations and/or local funds (14 percent). Nineteen percent of schools were unable to identify where the additional teaching staff entitlement had been allocated.

Not all schools had a clear rationale for their allocation of the additional teaching staff entitlement. This was the case in 37 percent of schools. The most frequent outcomes identified by the remaining 63 percent of schools included release time for senior managers (31 percent)

¹ (Barwick H 2003, see Appendix 5).

and the introduction or increase in programmes targeted at individual student learning needs (19 percent). The creation or increase in staff non-contact time and a reduction in class sizes was also noted by a smaller number of schools.

In the majority of cases, schools described processes or activities as the key purpose of the way in which the additional teaching staff entitlement had been used. Goals were expressed in terms such as: new opportunities for student learning; better programmes; and upskilled staff. In the small number of schools where goals had been expressed as student outcomes, achievement in literacy was most frequently identified.

Schools were asked to identify who was involved in making decisions about the types of activities that the additional teaching staff entitlement had contributed to. Principals are the key decision-makers when allocating additional teaching resources in their schools. Staff involvement in decision-making was comparatively uncommon and in only 36 percent of schools were all board members involved in deciding the allocation of these resources. Sixty-three percent of schools had clear processes for making decisions about the allocation of their teaching entitlement. Goals identified in school strategic plans and/or the results of self-review were the key influences on resource allocation in these schools.

Decision-making for the use of the additional teaching staff entitlement was usually undertaken as part of wider decision-making about allocation of the school's staffing entitlement and school resources generally. This was confirmed by the finding that about 75 percent of schools were using other school resources as well as the additional teaching staff entitlement to contribute to outcomes for which the entitlement had been allocated. These resources, provided by the board of trustees through the operations grant, most commonly took the form of additional teachers or teacher aides.

Effective use of the additional teaching staff entitlement

Schools can only assess the impact of additional teaching staff on student outcomes if they can identify how they have used the entitlement. Forty percent of schools were found to have well or adequately defined and measurable goals. A significant number of schools had only some definition or had not defined their goals.

Few schools were found to have effective processes in place for monitoring and evaluating the impact of the use of the additional teaching staff entitlement on the quality of education in their school. This makes it challenging for schools to assess the extent to which they are allocating their resources in the most effective way. Clear goals linked to student learning outcomes were commonly observed in those schools where effective measures were in place.

Half of the schools in this evaluation had identified goals and outcomes that were feasible and could realistically be expected to be achieved as a result of the additional teaching staff entitlement made available to the school. A focus on established student learning needs was regularly evident in those schools that had effectively matched the allocation of their entitlement with manageable goals for its use.

Having an effective process for identifying students' learning needs also enabled schools to allocate the additional teaching staff entitlement to address the priority needs of their students in 19 percent of cases. Another 30 percent of schools were addressing some of their students' priority needs through the use of the entitlement.

Outcomes as a result of School Staffing Improvements

Goals set for the use of the additional teaching staff entitlement were being achieved in 18 percent of schools. Goals were largely being achieved in a further 35 percent of schools. The most frequently observed goals included: increases in student literacy levels; the maintenance of low class sizes; non-contact time made available for teachers; and the release of professional

leaders from the classroom. In many schools goals were focused on processes or activities, rather than student outcomes. Therefore, achieving goals identified for the use of the additional teaching staff entitlement often required only that an activity occur.

School characteristics, such as school type, locality and decile, were not shown to have a direct relationship with the outcomes experienced by schools as a result of their use of the entitlement. Schools were most likely to achieve the outcomes they set for themselves when their goals for the use of the additional teaching staff entitlement were well-defined and measurable, feasible and realistic and had been implemented as the school had planned.

Introduction

The School Staffing Review Group (SSRG), a group representative of the education sector, was convened by the Minister of Education in 2000 to review the strengths and weaknesses of the staffing entitlement system. Current school staffing improvements form part of a response to recommendations made by the SSRG to Government.

The Government's response to the recommendations of the Review Group was a commitment to the staged implementation of approximately 3,700 additional full-time teacher equivalent (FTTEs) positions. It is timely, at this point, to carry out an evaluation of the impact of the additional teaching staff intervention to date.

This report presents findings from an initial evaluation, which has focused on:

- the extent to which schools make decisions about using the additional teaching resources for activities that are likely to be effective in improving student outcomes; and
- the extent to which schools have effective mechanisms in place to evaluate the impact of these activities.

This evaluation was carried out in 110 schools nationally between July and September 2004.

SCHOOL STAFFING IMPROVEMENTS

Background

School Staffing Review Group

The goal of the School Staffing Review Group is to improve educational outcomes for students. The group was given the task of developing a long-term plan for aligning teacher resourcing with the needs of students. The foreword to the *Report of the School Staffing Review Group* (February 2001) outlines the context for the review:

*'The existing staffing formulae do not adequately address the extra workload inherent in particular school environments such as low decile schools, small schools and schools with teaching principals. There is also a general concern about workload levels for both teachers and principals.'*²

The final report reflected the Review Group's view that significant increases in school staffing would 'improve the capacity of schools to deliver quality education and resolve the problems of teacher workload.' The Review Group recommended significant improvements to staffing, costing approximately \$235 million, in the areas of management, curriculum delivery, guidance and pastoral care, and Māori medium education, to be implemented over 10 steps.

The following extract from the final report outlines the rationale behind these recommendations *Additional demands have been placed on schools through changes to the definitions of "adequate education", and the systems which were to provide this to students. This has increased the need for teachers.*

Meeting the requirements of the Government for delivery of an adequate education for students requires a sufficient number of teachers to ensure both the direct delivery of curriculum to

² Trevor Mallard (foreword), *Report of the School Staffing Review Group*, Ministry of Education, February 2001, p 3.

*children in the classroom, and the management structures to support this delivery. The Review Group believes that there are currently too few teachers in schools to meet these demands.*³

The recommendations also address teacher supply and retention, identifying teacher workload and stress as key factors in recruitment and in teachers' leaving the profession.

The Government response

The Government has developed a staged implementation plan for improving staffing, based on the recommendations of the Review Group. Subsequently the Government made a commitment to fully implement recommended staffing improvements by 2007 at the latest, and by 2006 if possible.

When implemented, the plan is intended to provide 3,700 additional full-time teacher equivalents (FTTEs). By 2004, the Government has increased staffing in schools under this initiative by approximately 2,090 FTTEs, at an estimated ongoing annual cost of \$128 million.

Implementation to 2004

Additional teaching staff have been provided to schools as components of the base staffing entitlements, through a reduction of the Maximum Average Class Size (MACS), and the introduction of a teacher-student ratio of 1:20 for Maori students who are taught in te reo Maori for more than 12.5 hours per week. The extra teachers are over and above what was required to meet roll growth. Annual allocations of extra staffing have been as follows:⁴

- an increase in staffing in small, isolated rural primary, secondary and area schools from the beginning of 2001 by an extra 160 FTTEs, distributed between about 460 schools, at an estimated cost of \$9 million a year.
- an increase in school entitlement staffing of approximately 380 FTTEs from the beginning of 2002, and 414 FTTEs ongoing, at an estimated annual cost of \$24 million. The staffing was allocated to schools as management and curriculum base staffing, and a reduction in the MACS from 28 to 27. This replaced the allowances provided in the bullet point above;
- an extra 739 FTTEs approximately from the 2003 school year onwards, at an estimated cost of \$46 million a year. The extra FTTEs were allocated as management, curriculum and guidance base staffing; and
- the 2003 Budget included an estimated \$49 million per year to provide an extra 774 FTTEs from the beginning of 2004 onwards. It was allocated as management, curriculum and guidance base staffing, and reduction in the MACS to 26, and the introduction of a staffing ratio of 1:20 teacher: students for Māori students who are taught in te reo Māori for more than 12.5 hours a week.

While additional staffing resources are allocated to schools as specific components of staffing entitlement, schools are free to apply the resource as they wish.

The specifics of the additional staffing provided for the 2002 to 2004 school years, outlining what this means for different school types, is attached as Appendix 1. The additional staffing entitlement received by schools in the sample for this evaluation ranges from 0.2 to 2.9 FTTEs.

³ School Staffing Review Group, *Report of the School Staffing Review Group*, Ministry of Education, February 2001, p 17.

⁴ Ministry of Education, *School Staffing Improvements information sheet*.

Methodology

EVALUATION QUESTIONS

The key question for evaluating the School Staffing Improvement plan is: ‘What impact has the increased teaching resource had on student outcomes?’

Evaluating the impact of the additional teaching staff on student achievement is a complex task⁵. Key issues have been identified below.

- Use and impact of the additional staffing will vary according to context. Schools are free to use the resource as they wish and particular school characteristics may result in different outcomes in different schools.
- The effects of additional staffing may be hard to distinguish from the impact of the many other initiatives currently in place in schools to support student achievement.
- Any roll-based changes to schools’ staffing entitlement may mask the effects of the additional staffing provided through the School Staffing Improvement Plan (eg the primary sector is facing falling rolls, and the secondary sector is experiencing a short term roll ‘bulge’).
- Schools may currently be using local funds to pay for additional teachers. The additional staffing resource may be used to pay for these teachers, allowing local funds to be diverted to other things, rather than increasing the number of teachers.

For these reasons it was decided that the initial evaluation should focus on the following two questions.

1. The extent to which schools make decisions about using the additional teaching resource for activities that are likely to be effective in improving student outcomes.
2. The extent to which schools have effective mechanisms in place to evaluate the impact of these activities.

EVALUATION APPROACH

This evaluation used a programme theory approach. Programme theory (or *theory-based*) approaches to evaluation use a programme logic model to describe the theoretical basis of programme delivery. The programme model is then used as a guiding framework for evaluation. The programme theory approach provides a basis for developing evaluation questions and interpreting evaluation findings in a case-specific way. It can help to address the challenge of evaluating across multiple contexts, a challenge particularly relevant to this evaluation, as outlined earlier.

⁵ Barwick H Issues for an evaluation of the impact of additional staffing. See Appendix 5

Programme theory approach - in this evaluation this does not refer to a grand theory in the traditional social science sense, but simply refers to a programme logic model, or “theory of change” that represents a plausible and sensible model of how the programme is supposed to work. When considering School Staffing Improvements, the ‘programme’ represented whatever it was that the additional teaching resource had been allocated for – this was not necessarily a discrete programme or activity.

Evaluation of School Staffing Improvements using a programme theory approach

The evaluation involved three stages. The first stage required review officers to work closely with the school to identify what the additional teaching resource was used for and why. Where schools had not clearly identified goals for the use of their entitlement, review officers worked with the school to identify how the entitlement was being used and the underlying reasons why the school had allocated their staffing resource in this way. A framework for the evaluation was then developed, allowing for the particular characteristics of the school and the way in which the resource was being used. In the second stage review officers used this framework in conjunction with indicators of good practice to evaluate the effectiveness of the way in which the school had used the resource.

The final stage was the collection of information about student outcomes as a measure of the impact of the use of the additional teaching resource.

Key activities for each stage of the evaluation are outlined below.

Stage 1 – Development of an evaluation framework

In close collaboration with the school, review officers identified and described under the following headings what the additional teaching resource was being used for:

- intended goals and outcomes;
- resources and means for goal achievement;
- activities intended to implement goals;
- anticipated difficulties or obstacles to implementing identified goals and outcomes; and
- acceptable measures, signs, or indicators of the effectiveness of allocating the additional teaching resource in this way.

Stage 2 – Evaluate the programme theory

This stage allowed for a comparison of the way in which the additional teaching resource was being used in the school with indicators of good practice that support effective resource allocation. These indicators are known as “process indicators”. When direct measures of student outcomes are not available, process indicators are a useful proxy of the extent to which it can reasonably be expected that the school’s use of additional teaching staff might have a positive impact on student achievement.

Questions considered in this stage

- Is the programme theory well defined?
- Is the programme theory reasonable?
 - Are the programme goals and objectives well defined, and are they measurable?
 - Are proposed indicators/measures of effectiveness valid and reliable?
 - Are the programme goals and objectives feasible, and is it realistic to assume that they can actually be attained as a result of the activities of this programme?
 - Does the programme address the priority needs of students?

Stage 3 - Is the programme theory effective in achieving the intended outcomes?

This stage required review officers to collect the school's information about student outcomes. This information had to be relevant to how the school had used the additional teaching resource.

Data collection

The information for this evaluation was collected by ERO review officers during the course of scheduled education reviews. The project was conducted as a multi-site evaluation.

A data collection worksheet, based on the questions included in the methodological framework and related to the high level evaluation questions, provided a guide to the information and evaluative judgements required from review officers.⁶ Review officers developed their own investigative questions, based on the evaluation framework specific to each school in the sample.

Questions were required to link to an identifiable distinct dimension of programme performance – and to do so in such a way that the quality of the performance could be credibly assessed.

Review officers gathered data from relevant school staff, classroom observations, school-wide and classroom documentation and formal and informal interviews with students. The evaluations took place in the context of a scheduled education review. Any relevant information gathered by other review team members has also been incorporated into the investigating review officer's findings during review team synthesis sessions.

Review officers were trained in preparation for collecting evaluative information for this project. This training has enhanced the level of reliability of the evaluative judgements of the review officers in the project team.

Data collected by ERO during scheduled education reviews⁷

During an education review, ERO considers information from a variety of sources including:

- self review information provided by the school;
- school strategic plans;
- school annual reports;
- the Board Assurance Statement and Self-Audit Checklist;

⁶ This worksheet is attached as Appendix 4.

⁷ For further information about ERO's process for conducting education reviews, please refer to the following documents, *Review process for schools* and *Education reviews in schools*, both available on the ERO website (www.ero.govt.nz) or by contacting your local ERO office.

- other documentation, including ERO's files; and
- ERO's institutional database.

During an education review, ERO also undertakes discussions with:

- members of the board;
- the principal;
- school managers;
- teachers and school staff;
- students;
- the Friend of the School (if involved); and
- the community (if appropriate).

For this evaluation ERO also considered information from the following sources, where relevant, gathered during the on-site part of the education review:

- teacher's work plans and assessment documents;
- classroom observations;
- classroom environments and displays;
- sample of students' work; and
- teaching and learning resources.

School involvement

The methodology for this evaluation required significant participation from all those in the school involved in developing and implementing any of the activities resulting from the additional teaching staff resource. This gave schools the opportunity to fully articulate the rationale on which resourcing decisions were made and their expectations for intended outcomes. This participatory approach to the data collection created opportunities to provide direct feedback to schools on the decision-making processes involved in use of the additional teaching resources.

Size and scope

All schools have access to the additional teaching staff resource. One hundred and ten schools are included in the sample for this evaluation.

Each individual school evaluation was carried out as part of an already-scheduled ERO education review. This constrained the extent to which the sample could be directly representative of the national population characteristics of school type and decile.

The following two tables show the characteristics of the final sample of schools included in the evaluation.

Table 1 – Decile

Decile	Frequency	Percent	National percent
Low (1-3)	23	20.9	30.0
Med (4-7)	47	42.8	40.0
High (8-10)	40	36.3	30.0
Total	110	100.0	100.0

Table 2 – Institution type

	Frequency	Percentage of sample	National Percent
Full Primary	34	30.9	44
Contributing Primary	43	39.1	32
Intermediate	6	5.5	5
Secondary	27	24.6	13
Composite (yrs 1-13)	0	0	4
Special	0	0	4
Total	110	100.0	100

The figures in these tables vary slightly from the intended sample, as some schools were unable to accommodate the review at that time. Table 1 shows that there is an under representation of low decile schools in the sample and an overrepresentation of higher decile schools. Table 2 shows that composite schools are not represented in the sample, secondary schools were overrepresented, and primary schools were under represented. In each case this should be considered when analysing any differences in outcomes that could be attributable to either of these school characteristics.

Findings

The evaluation findings follow the three stages of the programme theory approach, as outlined in the previous discussion about the methodology used for this evaluation. Each section is based on the full 110 schools included in the sample, with missing responses indicated where relevant. Where schools were not aware of the entitlement, or aware but not able to identify its use in the school, ERO review officers worked with the school to make this identification and provide responses for the sections focused on the application of the entitlement in the school.

WHAT ARE SCHOOLS USING THE ADDITIONAL TEACHING ENTITLEMENT FOR AND WHY?

Awareness of the School Staffing Improvement Plan

Awareness of the additional teaching staff entitlement allocated through School Staffing Improvements varied among the different groups and individuals that make up the school community^{8 9}. Principals had the highest awareness of the additional teaching entitlement while students and parents had the lowest awareness.

Awareness was high amongst principals with 92 percent being aware of the existence of School Staffing Improvements. However, school boards of trustees, who are the employers of staff, were not aware of School Staffing Improvements in 36 percent of the schools and were fully aware in only 22 percent of schools. In the remainder of schools some of the trustees were aware.

There was not a high awareness among teachers of School Staffing Improvements. In only 18 percent of schools were all teachers aware of the additional teaching entitlement. In 46 percent of schools no teachers were aware of the additional teaching staff made available to schools through School Staffing Improvements.

There was little awareness of School Staffing Improvements among students and parents. In 96 percent of schools there were no students with any knowledge of the entitlement and in 90 percent of schools no parents were aware¹⁰.

Identifying the allocation of the additional teaching entitlement in the school

Groups and individuals in the school were asked if they knew where the additional teaching entitlement had been allocated in their school^{11 12}. This question was pitched at identifying

⁸ A Kruskal-Wallis test was used to test for a difference in distributions of responses for decile groups, that is low, medium and high decile groupings. The level of statistical significance was set at $p < 0.05$. No statistically significant difference was found. See appendix 2.

⁹ A Mann-Whitney U test was used to test for a difference in distributions of responses for school type, that is primary and secondary or composite schools. The level of statistical significance was set at $p < 0.05$. A statistically significant difference was found in only one case. In secondary or composite schools, teachers employed as a result of the entitlement were more aware of the existence of the additional teaching allocation. See appendix 2.

¹⁰ Review officers were able to interview parents themselves in a small number of cases. In most instances, however, information reported about parental knowledge and involvement has been reported by the school themselves, on the basis of the feedback they have received by parents and the communication/s that have (or have not) taken place between the school and parents about the additional teaching staff entitlement.

¹¹ A Kruskal-Wallis test was used to test for a difference in distributions of responses for decile groups, that is low, medium and high decile groupings. The level of statistical significance was set at $p < 0.05$. No statistically significant difference was found. See appendix 2.

where the additional teacher hours had been allocated, rather than asking about any specific outcome such as an allocation had been intended to achieve.

Self-reported knowledge about how the entitlement is allocated in schools showed a similar pattern to that relating to awareness of the entitlement with considerable variance among the groups and individuals that make up the school community. Principals had the most knowledge about how the entitlement was allocated in their schools with students and parents having the least knowledge.

In 89 percent of the 110 schools the principal indicated that they had knowledge of how the entitlement was allocated in their school and the remaining 11 percent said they had no knowledge (this included the eight percent of principals who had no knowledge of the existence of the entitlement, outlined above). In only 16 percent of schools did all of the board of trustees indicate that they had knowledge about how the entitlement had been allocated in their school. Many of the board had knowledge of the allocation in another 16 percent of schools. In 68 percent of schools few or none of the board of trustees had knowledge about how the additional teaching entitlement was being used in their schools.

Teachers' knowledge about how the entitlement was allocated is of particular interest given that one of the desired outcomes of the additional teaching staff entitlement was to ease teachers' workload. Schools were asked to rate whether they considered "all", "many", "a few" or "none" of their teachers had knowledge of how the entitlement was being allocated in their school. In 70 percent of schools "none" or only "a few" of the teaching staff had any knowledge about how the entitlement was allocated (this includes the 46 percent of teachers above who did not have any knowledge of the existence of the entitlement).

Very few students or parents had any knowledge of how the additional teaching staff entitlement had been allocated in their school.

In summary, knowledge of the entitlement and its allocation in schools varied. Principals had the most knowledge although some are still unaware of how the entitlement had been allocated in their schools. There was only a low level of knowledge of the allocation of the entitlement among boards of trustees. Setting realistic goals and assessing outcomes from the allocation of such staffing becomes a major challenge in these schools.

How the staffing entitlement is allocated

Schools (usually the principal) were asked, from the following options, where the additional teaching entitlement had been allocated^{13 14}:

- employment of new staff;
- charging against entitlement a teacher who was previously charged to the operations grant, thus freeing up operations funds;
- maintenance of staffing levels following a drop in general staffing entitlement as a result of a decrease in the school's roll;

¹² A Mann-Whitney U test was used to test for a difference in distributions of responses for school type, that is primary and secondary or composite schools. The level of statistical significance was set at $p < 0.05$. No statistically significant difference was found. See appendix 2.

¹³ A Kruskal-Wallis test was used to test for a difference in distributions of responses for decile groups, that is low, medium and high decile groupings. The level of statistical significance was set at $p < 0.05$. No statistically significant difference was found. See appendix 2.

¹⁴ A Mann-Whitney U test was used to test for a difference in distributions of responses for school type, that is primary and secondary or composite schools. The level of statistical significance was set at $p < 0.05$. A statistically significant difference was found in two cases: in secondary or composite schools: (i) charging against entitlement a teacher who was previously charged to the operations grant, thus freeing up operations funds, and (ii) an increase in the hours of part-time teaching staff. See appendix 2.

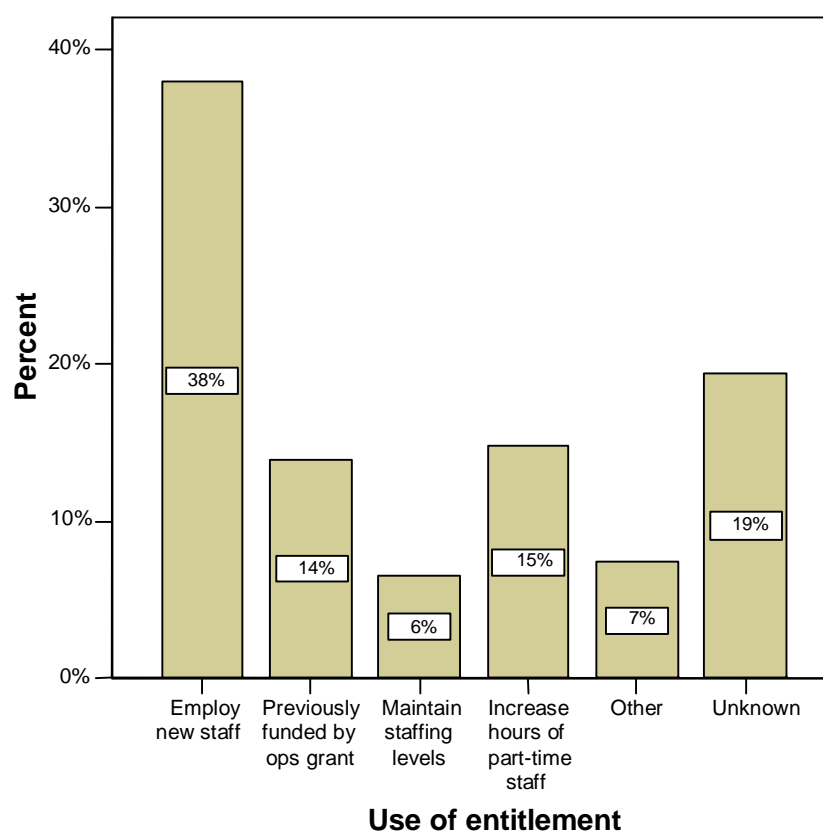
- increase in the hours of part-time teaching staff; and
- “other” - allocation other than that outlined in the options above.

In almost all cases only one option for the allocation of all of the additional teaching entitlement was indicated in each school.

The use of the additional teaching staff entitlement has most frequently resulted in the employment of new staff (38 percent of schools). Further uses have resulted in funding the salaries of staff that were previously funded from the operations grant, maintaining staffing levels after roll reductions and increasing the hours of part-time staff. “Other” allocations of the entitlement include “banking” the resource for use later in the year.

It is also worth noting that when all principals were asked to specifically identify how the entitlement had been allocated in their school, 19 percent of these principals were unable to do so (indicated as “unknown” in *Figure 1* below). This is a larger proportion of the whole sample than the 11 percent of principals that had previously acknowledged that they could not identify how the additional teaching staff entitlement had been allocated.

Figure 1 – Allocation of additional teaching staff entitlement



Why has the additional teaching entitlement been allocated in this way?

The professional leadership (the principal and senior management) of the school was asked about the specific purposes or outcome sought for the way in which additional teaching staff entitlement had been allocated. The principal was most frequently the source of information for this question.

In 63 percent of the 110 schools the professional leaders were able to identify the purpose for which the entitlement was being used. In 37 percent of schools there is a significant gap

between principals knowing how the entitlement is allocated in general terms and being able to identify the purpose or outcome for which it is being used in their schools.

Where the professional leaders were unable to identify the purpose for which the additional teaching staff entitlement had been used they were asked for the reasons why this identification was difficult.

Two main reasons were identified. Firstly, principals stated that the additional teaching staff entitlement was included in their schools' general staffing pool and was not treated as a separate staffing allocation. These principals tended to consider learning and teaching programmes in the context of their total staffing pool rather than separating the additional teaching staff entitlement for specific programmes. Some principals considered the entitlement was too small to be treated separately.

The second reason related to the lack of awareness of the entitlement among some principals. Several principals were new to their schools and had been either unaware or unable to identify the entitlement. A small number of principals said they had difficulty identifying the additional teaching staff in staffing entitlement notices from the Ministry of Education.

Where the professional leaders were unable to identify the purpose for which the additional teaching entitlement was being used, review officers were asked to work with the principal to try and make this identification. This was possible in most cases. This has enabled information about the use of the additional teaching entitlement by these schools to be included in this evaluation.

How the additional teaching entitlement is being used in 2004

Schools were asked to identify how their school's additional teaching staff entitlement was being used in 2004 and the expected goals or outcomes. A majority of schools have used the entitlement for a single purpose. About a third of schools had used the entitlement for two purposes and about one-sixth had spread the resource across three purposes.

About half of the purposes to which the entitlement was allocated relate to the continuation of activities or programmes already in operation. New activities and programmes accounted for about one-third of the purposes and the remaining purposes could not be identified or were a mixture of new programmes and continuation of current programmes.

While the continuation of programmes and activities was dominant overall, new programmes and activities were dominant where the entitlement was spread across more than one purpose. It is likely that in these schools the first priority had been to ensure the continuation of existing programmes and then to use the entitlement to create new opportunities.

There was a large range of purposes for which the entitlement was used. The most frequently mentioned uses of the entitlement were to:

- release or increase the release time for the principal or senior staff from class teaching responsibilities (31 percent);
- introduce or increase programmes for students with special learning needs including reading recovery, ESOL and students at risk (19 percent);
- create or increase staff non-contact time (9 percent);
- reduce class sizes (9 percent);
- introduce or extend a programme for students with special abilities (6 percent);
- extend or strengthen courses or curriculum programmes (6 percent); and
- appoint an additional teacher for a specific programme (5 percent).

A further 20 purposes were identified that feature in fewer than five percent of schools.

Goals and outcomes

Schools were asked to identify the goal or outcome for each of the activities to which they had committed the additional teaching staff entitlement^{15 16}. Interestingly, the responses to this question predominantly identified activities or processes as the goal and did not strongly identify student learning outcomes as the goal. Measures, signs or indicators of effectiveness identified by the schools are presented in Appendix 3.

Nearly three-quarters of the responses related to what schools would do with the entitlement and were stated in terms of processes or activities. These goals and outcomes¹⁷ were stated in terms such as:

- opportunities for students;
- promoting learning;
- catering for particular students;
- complying with the employment contract;
- retaining small classes;
- using staff expertise;
- reducing class sizes;
- increasing teachers' skills;
- establishing individual education plans;
- supervising gifted students;
- raising standards of planning;
- ensuring curriculum coverage;
- developing policies and procedures;
- managing the junior school;
- introducing te reo in classroom programmes; and
- working with students with individual needs.

Some of these goals and outcomes are so general that it would be difficult to identify the outcomes of the additional teaching staff entitlement. Others seem to only have a very indirect link with improving student achievement focusing more on making a difference to teacher workload.

It is likely that improving student achievement is implicit in the intended goals or outcomes but this was not frequently stated as the goal. The achievement of these sorts of goals was likely to be measured in terms of new opportunities, better programmes, upskilled staff, facilitated professional development. Any resulting impact on student achievement was not being used as an indicator of the effectiveness of the entitlement use.

¹⁵ All schools were asked if they had developed a process to measure the effectiveness of the way in which the entitlement had been allocated. A Kruskal-Wallis test was used to test for a difference in distributions of responses for decile groups, that is low, medium and high decile groupings. The level of statistical significance was set at $p < 0.05$. No statistically significant difference was found. See appendix 2.

¹⁶ All schools were asked if they had developed a process to measure the effectiveness of the way in which the entitlement had been allocated. A Mann-Whitney U test was used to test for a difference in distributions of responses for school type, that is primary and secondary or composite schools. No statistically significant difference was found. See appendix 2.

¹⁷ Many of the suggested 'goals and outcomes' are in fact processes, but were named by schools as goals and outcomes and so have been reported as such here.

Only about one-sixth of schools identified the goal for using the entitlement to improve student learning outcomes. Examples of these goals include:

- increasing the number of students with a qualification in agriculture;
- reducing student referrals, stand-downs and suspensions;
- improving reading skills identified through the six-year net;
- having students leave the programme with a reading level of six years;
- raising the reading levels of up to 93 percent of the programme participants to within 0.5 or better of their chronological age;
- lifting student achievement in literacy at all school levels with an emphasis on at-risk students;
- having at least 80 percent of Māori boys achieving at or above their chronological age in reading;
- bringing the literacy levels of ESOL students to the same level as non-ESOL students;
- improving students' English competency so they can successfully enter mainstream classes;
- improving student achievement to the targets contained in the school's strategic plan;
- developing students' physical, cooperative and competitive skills;
- students demonstrating an understanding of how to undertake the peer reading strategy; and
- improving levels of student achievement in oral language and reading in the junior and middle school.

About one-tenth of the activities to which the entitlement is allocated had no specific or clear goal of any kind.

The purpose of the additional teaching staff entitlement is to improve the capacity of schools to deliver quality education. This evaluation has identified that a majority of schools believe that they are using the entitlement to increase their capacity to deliver quality education. However, without clearly defined outcomes in terms of intended student achievement there remain clear issues about how schools will know that the quality of education they provide has been improved.

Who is involved in decision-making about use of the entitlement?

Principals are the key decision-makers when allocating additional teaching resources in their schools. Staff involvement is comparatively low in this respect. There are also questions about how principals share decisions with their boards and parent communities.

Decisions on the use of the additional teaching staff entitlement involved principals in 92 percent of schools. All board members were involved in this decision-making in 36 percent of schools while no board members were involved in 46 percent of schools.

All the staff were involved in decision-making in 20 percent of schools, some or a few staff were involved in 44 percent of schools and none of the staff were involved in 36 percent of schools. The involvement of students and parents in decision-making featured in only a very small number of schools.

The involvement of trustees and staff in decisions relating to the use of the entitlement was higher than their awareness and knowledge about how the entitlement is allocated. The explanation for this seems to be that trustees and staff are involved in decision-making about staffing allocations in general rather than specifically about the additional teaching staff entitlement. This question was often responded to in this context and reinforces the finding that new sources of staffing entitlement or funding are subsumed within the general pool in many schools. Decision-making, in these cases, was rarely found to make linkages between the additional entitlement and its original policy intent.

Decision-making processes

Sixty-three percent of the schools in this study had clear plans or processes for allocating their staffing entitlement. In the schools where there were clear processes for decision-making on staffing allocations the processes generally involved the principal making decisions collectively with senior staff and involving teaching staff in the consultation process. Boards of trustees were frequently brought in at the later stages of making decisions for their approval.

The goals contained in the school's strategic plan and/or the results of school self review were the key influences in determining the allocation of staffing entitlements in 34 percent of the schools. These were the dominant influences, followed by decisions directly related to student achievement in a further 14 percent of the schools.

Although plans or processes for allocating the entitlement of additional teaching staff were unclear or not evident in about 37 percent of schools, a majority of schools (78 percent) had established priorities in relation to staffing as a whole. In order of frequency, the following priorities for staffing were identified:

- support for literacy;
- special needs (including gifted and talented);
- meeting requirements for non-contact time for teaching staff;
- reducing class size;
- release time for professional leadership;
- support for staff (including professional development); and
- pastoral care for students.

Other resources used to contribute to outcomes of additional staffing

There is clear evidence that schools used other resources as well as their additional entitlement to contribute to the outcomes for which the extra entitlement had been allocated. As noted above, the majority of schools were using their entitlement to contribute to already existing programmes in the school.

About 75 percent of schools indicated that the board of trustees had provided the additional support through the operations grant. The greatest part of this support was in the form of additional teachers or teacher aides. The remaining board support was through specific funding allocated to programmes.

It is difficult to relate some of this additional resourcing to specific outcomes for students. For example, some schools already used funding from the operations grant to release principals and senior staff. In these cases, the additional teaching staff entitlement allowed further release time and was not directly tied to specific learning outcomes for students.

A few schools had tied additional staffing programmes to community resources, for example using key people to support a programme aimed at strengthening families. Others used physical school resources to support their programmes, for example a performing arts centre or library resources.

Length of time schools intend to allocate the additional staffing entitlement as it is currently used

There was some variability between schools about the intentions for the future allocation of the additional teaching staff allowance. The largest number (37 percent) intended to make the allocation permanent or leave it in place indefinitely for as long as a need exists. A smaller group of schools (9 percent) intended to allocate the resource for as long as possible (with the expectation that this will not be permanent). Some of these schools were dependent on other sources of funding to support the programme.

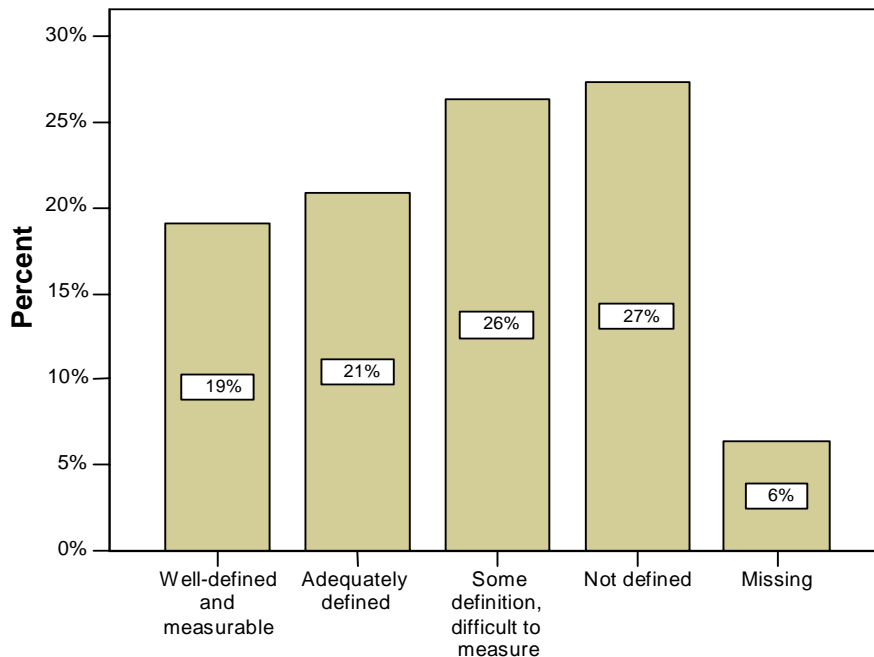
About 20 percent of schools said they would review the allocation annually and make changes in line with new goals in their strategic plans. A smaller number (12 percent) intended leaving the allocation in place until the end of 2004 and a few others until the end of 2005. The remaining schools were unsure or did not state their plans for the future allocation of the entitlement.

EFFECTIVE USE OF THE ADDITIONAL TEACHING STAFF ENTITLEMENT

Well-defined and measurable goals

This study evaluated the extent to which the goals and outcomes identified by schools for the allocation of the additional teaching staff entitlement were well-defined. Clear definition of the intended goals and outcomes for the use of the entitlement is necessary to enable progress against goals to be measured. A significant number of schools had only some definition or had not defined their goals.

Figure 2 Well-defined and measurable goals



Goals well-defined and measurable

Nineteen percent of schools had well defined and measurable goals for the way in which the additional entitlement had been allocated. A further 21 percent were considered to have defined their goals adequately. Twenty-six percent of schools had some definition of their goals although these were difficult to measure, while 27 percent of schools had not defined their goals. Information was not provided for the remaining schools.

Effective monitoring and evaluation

A significant increase in staffing through the additional teaching staff entitlement is intended to improve the capacity for schools to deliver quality education as well as alleviate the problems of teacher workload. In this study ERO evaluated the extent to which the resource is likely to be effective in improving student learning outcomes and the extent to which schools have effective mechanisms in place to evaluate the impact of the activities made possible by the entitlement.

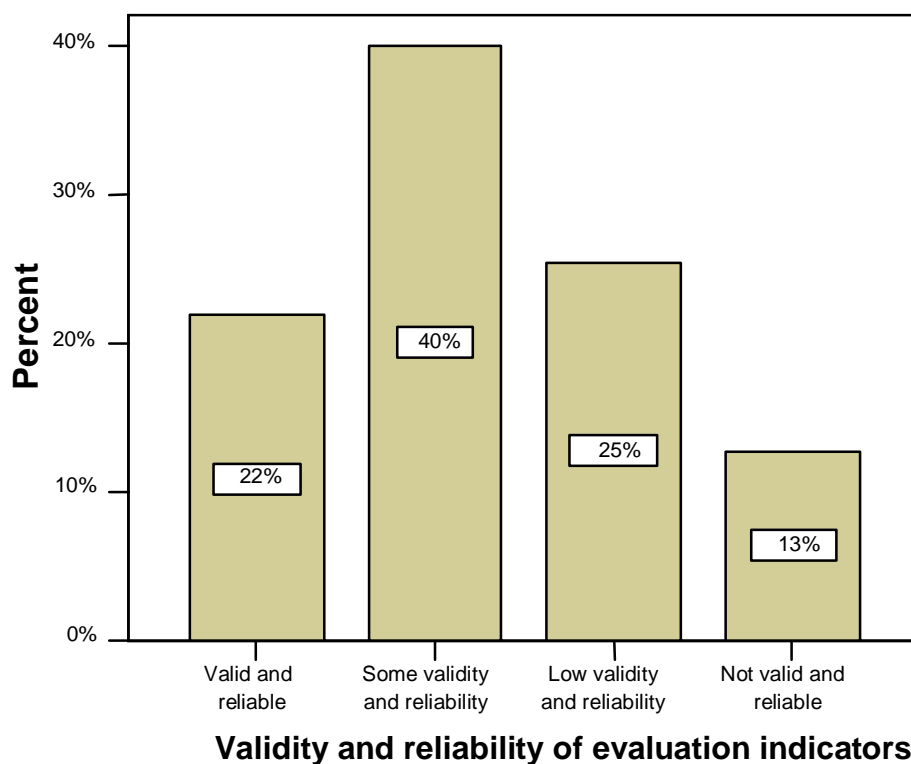
Schools were asked about the indicators of effectiveness they had developed for identifying the effectiveness of the activities generated by the additional teaching staff entitlement. While 51 percent of the 110 schools had identified some indicators of effectiveness, a significant number (49 percent) had not identified any. Some of the schools included in this 51 percent are drawn from the 26 percent of schools indicated in *Figure 2* as having goals with some definition, although hard to measure. Only 38 percent of the total number of schools in this study had developed a process for actually measuring the outcomes of their activities against the indicators they had developed. This figure aligns more closely with the proportion of schools in *Figure 2* that had well-defined and measurable goals (19 percent) and adequately defined goals (21 percent).

Among those schools that have effectiveness indicators the most common (13 schools) was the use of student achievement information. This was particularly relevant to reading recovery programmes and Individual Education Programmes. Other indicators used were information provided through staff appraisals or informally through incidental or anecdotal information.

Validity and reliability of evaluation measures

The validity and reliability of the effectiveness measures were evaluated for the 51 percent (56 schools) that had identified monitoring and evaluation indicators. Reliable measures result in consistent and well-understood information about outcomes. Valid measures are those that actually measure what they intend to measure and what is important to measure in terms of the outcome sought.

Figure 3 Validity and reliability of evaluation indicators



A significant number of schools used measures that were not considered to provide an accurate indication of the extent to which desirable outcomes are being achieved.

Of the 51 percent of schools that had identified indicators against which to measure outcomes resulting from the additional teaching staff entitlement, only 22 percent (12 schools) were found

to have measures that were valid and reliable. A further 40 percent (22 schools) had measures with some validity and reliability.

The schools that had valid and reliable measures were significantly those schools using the entitlement for specific programmes and using student achievement information, moderation processes, observable behaviours, norm-referenced and standardised assessment tools and the skills of specialist teachers in the assessment process. These programmes are likely to have clear goals related to student learning outcomes.

A note on the following sections

Where schools had not clearly identified goals for the use of their entitlement, review officers worked with the school to identify how the entitlement was being used and the underlying reasons why the school had allocated their staffing resource in this way. The evaluative judgements in the following sections, therefore, consider goals articulated by schools both independently and in conjunction with review officers at the time of the evaluation.

Results are, therefore, based on the full sample of 110 schools, not just the subset of schools (depicted in *Figure 2*) that had been able to identify clearly defined and measurable goals.

Feasible and realistic goals

The feasibility of the goals and objectives, for which the additional teaching staff entitlement had been allocated, was evaluated. The extent to which it was realistic to assume the goals and objectives could actually be attained as a result of the staffing allocation to the school was also considered.

Nineteen percent of schools had goals that were feasible and realistic while 31 percent had goals that were reasonably feasible and realistic. Twenty percent of schools had goals with limited feasibility and 15 percent had goals that were neither feasible nor realistic. Not enough information was available to make this judgement for 16 percent of schools.

Some schools where the goals had limited feasibility said the size of the additional resource was too small to be realistic. In these schools it appeared that the allocation of the additional resource had not been matched with manageable goals for its use.

Those schools with feasible and realistic goals generally focused the entitlement on established student learning needs and monitored the use of the resource and the learning outcomes closely.

Addressing the priority needs of students

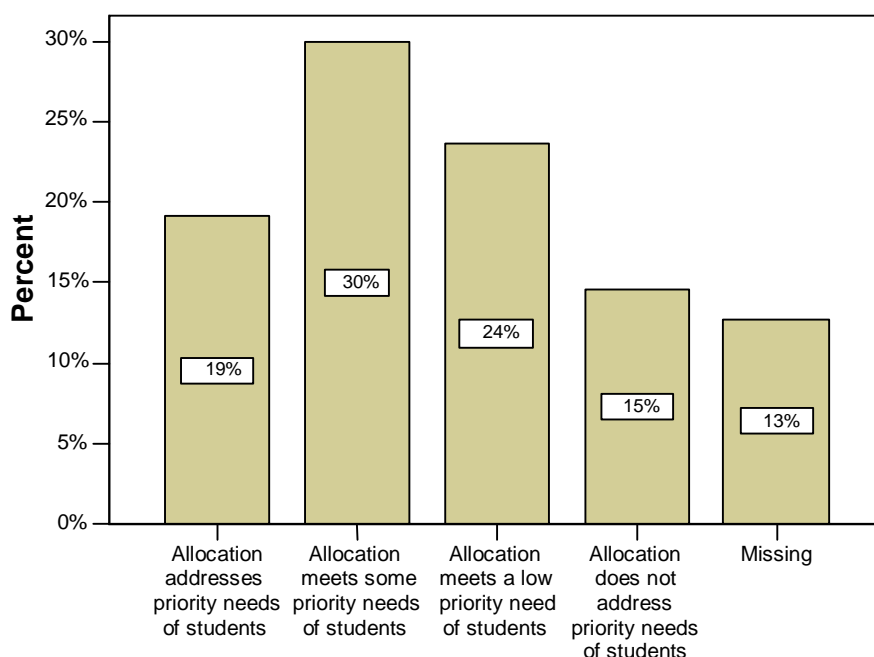
Schools should have a process of identifying and prioritising areas of highest need for their students. How priorities are defined will vary from school to school. The extent to which the additional teaching staff entitlement had been allocated to address the priority needs of students was considered in this evaluation. In 19 percent of schools the allocation addressed the priority needs of students while 30 percent met some of students' priority needs. In the remaining 24 percent of schools the allocation had a low emphasis on the priority needs of students and in 15 percent the allocation did not address the priority needs of students. Not enough information was available to make this judgement in 13 percent of schools.

The extent to which primary schools were using the entitlement to address the priority needs of students was compared with the use by secondary schools. The difference between the groups was not statistically significant.¹⁸

¹⁸ Difference in ratings between primary (that is full primary, contributing and intermediate schools) and secondary schools (schools with students from Years 7 to 15 and those with students from Years 9 to 15) was checked for significance using a Mann Whitney U test. The level of statistical significance was set at $p < .05$.

Among the schools that met the needs or some of the needs of their students the most common use of the entitlement related to specially targeted programmes for students where learning needs had been directly identified. These programmes were usually linked to diagnostic and assessment information that provided information about the need to target the resource and which students had priority needs. A small number of these schools recognised the advantages of small group and individual teaching of students with identified learning needs that smaller classes or the release of the principal or senior staff could provide.

Figure 4 Entitlement being used to address priority needs of students



Extent to which use of entitlement addresses priority needs of students

The main reason schools had little or no focus on the priority needs of students was the perception that the needs were too great or too wide. In some schools the priority student needs were not identified or were not considered in the allocation of the entitlement.

Allocation of the additional teaching staff entitlement as planned by schools

The allocation of the additional teaching staff entitlement has largely been as individual schools have planned. The entitlement had been fully allocated as planned in 52 percent of schools and to some extent in 22 percent of schools. This leaves 26 percent of schools where the entitlement had been allocated as planned to a limited extent or not at all. In the latter group of schools there was unlikely to be a plan for the allocation of the entitlement or there was no knowledge of its existence.

The extent to which primary schools were effectively allocating the entitlement as planned by them was compared with the effectiveness of the allocation by secondary schools. The difference between the groups was not statistically significant.¹⁹

¹⁹ Difference in ratings between primary (that is full primary, contributing and intermediate schools) and secondary schools (schools with students from Years 7 to 15 and those with students from Years 9 to 15)

Unintended side-effects of allocation

About half of the schools (48 percent) reported there had been no unintended side effects from the allocation of the entitlement. A further 30 percent were able to identify unintended side effects while information on the remaining schools was not available.

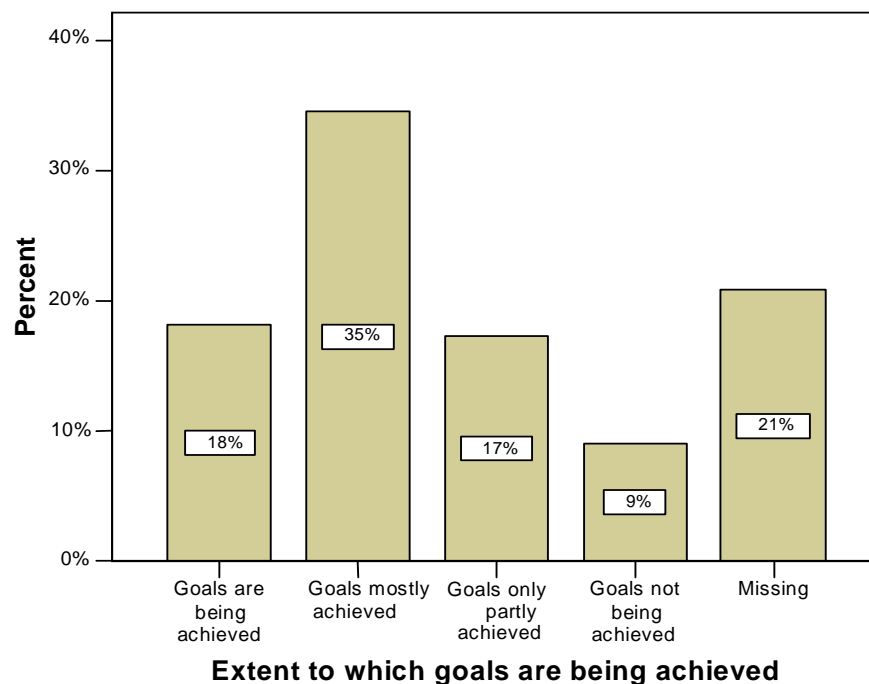
Among those schools where side-effects were identified, there was no dominant effect. Some of the responses included:

- less stress, more time and more flexibility for the principal;
- schools challenged to redefine their focus on priority student needs;
- students better catered for and more involved;
- teachers taking more responsibility for their teaching practice;
- schools attracting more students with special learning needs;
- teaching principals' classes being better served by release teachers who were able to concentrate on their teaching; and
- schools investigating new programmes and more creative use of their staffing resource.

OUTCOMES AS A RESULT OF SCHOOL STAFFING IMPROVEMENTS

The extent to which the goals for using the additional teaching staff entitlement were being met was evaluated. The goals were being achieved in 18 percent of schools and goals were mostly being achieved in 35 percent of schools. Goals were being partly achieved in 17 percent of schools and in nine percent of schools the goals were not being achieved.

Figure 5 Extent to which goals of entitlement use are being achieved



was checked for significance using a Mann Whitney U test. The level of statistical significance was set at $p < .05$.

The remaining 21 percent of schools included; those who could not identify where the additional teaching staff entitlement was being used; those that had not identified any goals for the use of the entitlement; and those that were not able to provide any evidence of outcomes being achieved as a result of entitlement use.

The extent to which primary schools were meeting their planned goals in the use of the entitlement was compared with the extent secondary schools were meeting their goals. The difference between the groups was not statistically significant.²⁰²¹

This information alone is not an indicator of the value or “worth” of the goals being achieved. As mentioned earlier, many of the goals identified by schools did not have direct links with student outcomes. Goals were regularly described as activities or processes, rather than outcomes. Successful achievement of these goals often only required that an activity occur. Very few schools were able to provide evidence of the impact of their additional teaching staff on student outcomes.

Evidence was found that demonstrated that the following types of goals were being achieved (in order of frequency):

- increase in student literacy levels;
- small class sizes being maintained;
- non-contact time requirements being met;
- professional leadership being released from the classroom;
- staff professional development taking place; and
- the reduction in stress levels of teaching staff.

In those schools where goals were being achieved, student achievement information was most frequently used in assessing the achievement of goals. While other indicators were used, deliberate observations in classrooms and of school management systems and documentation was the only other significant process for assessing the achievement of goals.

²⁰ Difference in ratings between primary (that is full primary, contributing and intermediate schools) and secondary schools (schools with students from Years 7 to 15 and those with students from Years 9 to 15) was checked for significance using a Mann Whitney U test. The level of statistical significance was set at $p < .05$.

Analysis of findings

School characteristics and use of School Staffing Improvements

The school characteristics of institution type, locality (rural or urban), roll and decile were analysed to see if any relationship existed between these characteristics and the following three key questions.

- To what extent are identified goals being achieved as a result of the school's use of the additional teaching entitlement?
- Is the professional leadership of the school able to identify the use of the entitlement?
- Are goals for the use of the additional teaching staff entitlement well-defined and measurable?

The first query above has been included because it is the key outcome being sought for use of the additional teaching staff entitlement, i.e. that schools are able to identify and achieve some particular outcome as a result of the additional resource. Because it was found that many schools were not aware of how the entitlement was being used in the school, this has been selected as the second question to compare for difference across key school characteristics. The final query has been included because of the impact that well-defined and measurable goals appears to have on the achievement of positive outcomes as a result of the use of the additional teaching staff entitlement (see analysis in the following section).

A Spearman's rho test was conducted to identify whether a relationship existed between any of the school characteristics identified above and performance against these three key questions. No significant relationship was shown to exist. Appendix 2 outlines the full results of this analysis.

Relationship between outcomes and process indicators²²

The key evaluation questions in this study are based on process indicators derived from considerations of good practice for resource allocation in schools. These indicators include:

- identification of staffing priorities as part of the decision-making process for use of the additional teaching staff entitlement;
- well-defined and measurable goals;
- valid and reliable indicators of effectiveness;
- feasible and realistic goals;
- use of the entitlement addresses the priority needs of students;
- staffing priorities are identified; and
- the use of the entitlement is allocated as planned.

The linear relationship (ie the extent to which an increase in performance in one variable will result in the increase in performance of another variable) between these process indicators and the extent to which goals for the use of the entitlement were achieved by schools was analysed. A significant relationship was found between all of these indicators and goal achievement (Spearman's rho, $p < 0.01$).²³

²² Please refer to the 'Methodology' section of this report (p 11-12) for an explanation of the role of process indicators in this evaluation.

²³ Appendix 2 includes the full results for this analysis.

The relationship between each process indicator and the achievement of goals is stronger the closer the indicator's correlation coefficient is to 1.0 (a perfect linear relationship). The indicators with the strongest relationship with the achievement of goals were well-defined and measurable goals (Spearman's rho = 0.413), feasible and realistic goals (Spearman's rho = 0.395), allocation of the entitlement as planned (Spearman's rho = 0.384) and addressing the priority needs of students (Spearman's rho = 0.377). While all of these relationships are significant, no one indicator alone demonstrates a very strong relationship with the achievement of goals. This limits the ability to use these indicators in isolation as predictors of the extent to which a school is likely to achieve the goals identified for their use of the additional teaching staff entitlement.

The four indicators were modelled using factor analysis²⁴ to identify the strength of any underlying relationships between each of the indicators and the extent to which goals had been achieved for the use of the additional staffing teaching entitlement.

Table 3 – Factor analysis of goals achieved

<i>Extent to which goals have been achieved</i>	<i>Percent of variation explained</i>			
	Goals being achieved	Most goals being achieved	Few goals being achieved	No goals being achieved
Extent to which goals are well-defined and measurable (high – low)	57%	39%	50%	62%
Extent to which goals are feasible and realistic (high – low)	22%	25%	25%	21%
Extent to which entitlement is allocated as planned (high – low)	16%	20%	19%	16%
Extent to which entitlement use addresses priority needs of students (high – low)	5%	17%	7%	1%

Table 3 shows that goals are most likely to be achieved when they are well-defined, measurable, feasible and realistic. For example, the factor analysis shows that when schools had well-defined and measurable goals this indicator (or factor) was able to explain 57% of the underlying factors that led to goals being achieved by the school. Having feasible and realistic goals accounted for 22% of school success in achieving goals, and so on. In the case where no goals were being achieved by the school, not having well-defined and measurable goals accounted for 62% of the factors related to this outcome.²⁵

²⁴ The purpose of factor analysis is to discover simple patterns in the pattern of relationships among the variables. In particular, it seeks to discover if the observed variables can be explained largely or entirely in terms of a much smaller number of variables called *factors*.

²⁵ While factor analysis is useful in identifying the existence and strength of relationships between factors (in this case the indicators focused on for this evaluation) and variables (in this case, the extent to which schools were achieving goals they had set themselves), the percentage figures that result should not be treated as absolutes. The number of factors that are included for analysis alters these figures. The ranking would, however, remain the same.

Schools that used the additional staffing resource effectively

All of the schools included in this evaluation were also scheduled for an ERO education review. Additional information about the general performance of the school reported in the education review informed the analysis of this evaluation. The education review of 10 of the highest performing schools²⁶ in terms of planning, goal setting, monitoring and achieving the goals identified for the use of additional teaching staff entitlement, were analysed for any similarities.

Consistent with the relationships identified above, all but one of these 10 schools had clearly defined goals for the use of their additional teaching staff entitlement expressed in terms of student outcomes. Goals and outcomes were frequently in the areas of literacy improvement and meeting students' special education needs.

The education reviews of these schools tended to include positive comments in the following areas.

- Good strategic planning and links to the curriculum.
'Teachers plan their programmes in detail with clear links to the national curriculum.'
'Literacy skills are well integrated across all other essential learning areas of the curriculum.'
- Access to appropriate tools and resources for teachers and students.
'Resources and a variety of technologies are used effectively to support the teaching and learning of reading and speaking.'
'The use of assessment tools such as running records and numeracy snapshots is well moderated, thereby providing high levels of school-wide consistency.'
'A range of assessment tools, including formalised testing and teacher observation, enables early identification of student learning needs.'
'Students have new learning resources that reflect their interests and personal experiences.'
- Effective professional leadership.
'The principal provides effective and collaborative leadership for the school, He is well supported by his senior management team.'
'The principal demonstrates strong, focused leadership and is ably supported by competent senior managers.'
'They provide high quality professional leadership.'
- Targeted professional development.
'Good use of professional development. Professional development has fostered a learning culture.'
'Professional development is cohesive, in-depth, well paced, has a clear sense of direction and caters for teachers' current needs.'
- Use of achievement data to implement programmes and identify student needs.
'Good use of pre and post-assessment data.'
'They use assessment data to identify students' strengths and needs and to provide a basis for planning.'
'Teachers use this achievement data as the basis for discussion about strategies to improve student learning to meet identified achievement targets.'

The areas of good performance identified above highlight effective management and leadership and a focus on student achievement. These areas of good performance are consistent with expectations for high performing schools generally. It appears that schools that are successful in

²⁶ These schools were selected on the basis of their performance across each of the areas evaluated. Each 'level of evidence' of effective practice was allotted a numerical value. The ten schools with the highest score, and therefore, the most effective practice, were then selected for inclusion in this section.

achieving the goals identified for the use of their additional teaching staff entitlement are likely to excel in other areas of school performance also.

Discussion

The impact of additional teaching staff on student outcomes can only be measured with confidence if schools can identify how they have used the entitlement. While most schools participating in this project could identify how the additional teaching staff entitlement had been allocated, a significant number (19 percent) were unable to do this.

The allocation of the additional teaching staff entitlement by schools would suggest that at the time the project was carried out (2004), the number of extra teachers in schools was lower than the 2,090 additional staff made available as part of School Staffing Improvements. Fourteen percent of the schools in this evaluation are using the entitlement for staffing previously charged to other funds. While this frees up funding for other uses in the school, the overall number of teaching staff is not increased. Thirty-eight percent of schools stated that they had employed new staff as a result of School Staffing Improvements.

In 37 percent of participating schools, the professional leadership of the school was unable to state the intended purpose for which the additional teaching staff entitlement had been allocated. The small size of the entitlement was most frequently given as the reason why they had been unable to identify a purpose for the allocation. The professional leadership can reasonably be expected to have a clear sense of the intended outcomes resulting from the way in which any and all resources in the school have been allocated.

The majority of schools had not made connections between the goals identified for use of the entitlement and improvements in student outcomes. The processes and activities that were most frequently identified may have had student achievement as an implicit goal, but without clearly defined outcomes in terms of intended student achievement issues remain about how schools will know that the quality of education they provide has been improved.

Most schools did not have adequate processes in place to monitor and evaluate their use of the additional teaching staff entitlement. Beyond the principal, few members of the school community knew of the existence of the additional entitlement or what purpose it was being used for in their school.

Evidence of improvements in student outcomes was most likely to be found in schools with clearly identified goals for the use of their additional teaching staff entitlement, linked to improvements in student outcomes.

Appendices

Appendix 1 Specifics of extra staffing provided from 2001 to 2004 school years

Small and rural schools: In 2001, small and rural (defined as qualifying for Targeted Rural Funding) schools were provided with base and roll-related additional staffing allowances, and the MACS was reduced from 28 to 27.

These allowances were subsumed in following years into entitlement staffing.

Base management, curriculum and guidance staffing: The following table sets out the maximum extra staffing in these components.

Begins from school years	Management (Yrs 1 to 13)	Curriculum (Yrs 9 to 13)		Guidance (Yrs 9 to 13)	
	FTTES	FTTES		FTTES	
	up to total of	up to total of	per year level	up to total of	per year level
2002	0.1	0.4	0.08	-	-
2003	0.2	0.4	0.08	0.4	0.08
2004	0.1	0.2	0.04	0.7	0.14
Total	0.4	1.0	0.2	1.1	0.22

The *management component* is a new base component for professional leadership for schools with students in Years 1 to 8, and for management time for Years 9 to 15. It is provided according to roll sizes as set out in the Review Group's recommendations i.e. 0.2 FTTEs for rolls of 1-28, 0.3 FTTEs for rolls of 29-60, and 0.4 FTTEs for rolls over 60.

The *curriculum component* for schools with students in Years 9 to 13 is in addition to what schools were already being provided under MRG as shown in the table below. The staffing improvements provide a maximum 0.2 FTTEs for each year level taught where the Years 9 to 15 roll is greater than 200. Where the roll is 200 or less, a sliding scale provides a minimum of 0.1 FTTEs per year level, up to 0.2 FTTEs.

	Minimum		Maximum	
	up to total of	per year level	up to total of	per year level
MRG	2.0	0.4	5.0	1.0
SSI	0.5	0.1	1.0	0.2
Total	2.5	0.5	6.0	1.2

The *guidance component* is a new component²⁷ which provides 0.22 FTTEs for each year level taught where the Years 9 to 15 rolls is greater than 200.

Where the roll is 200 or less, a sliding scale provides a minimum of 0.08 FTTEs up to 0.22 FTTEs per year level.

²⁷ The MRG formulae include an element of guidance staffing which had been separate staffing component prior to MRG.

Maximum Average Class Size (MACS). This applies to students in Years 1 to 8 to a certain roll size in those year levels:

1. From 2002, it was reduced from 28 to 27 for students in Years 1 to 8 in schools with rolls of less than 160.
2. From 2004, it was reduced from 27 to 26 for students in Years 1 to 8 in schools with rolls of less than 176.

Maori medium education: From 2004, the curriculum entitlement staffing ratio for Maori students in years 1 to 11 who are taught in Maori for more than 12.5 hours a week is 1:20 teacher : students. Students in Years 12 and 13 continue to be resourced at 1 : 18 and 1: 17 respectively. The allocation is based on the number of Maori (but not other) students who are reported by schools to be in Level 1 or Level 2 immersion classes for the purposes of receiving Maori Language Programme Funding.

Appendix 2 Testing for relationships

Key evaluation questions and school characteristics

			Institution Type	Locality	2003 Roll (Banded)	Decile
Spearman's rho	Extent to which goals are being achieved	Correlation Coefficient	-.077	-.040	.009	.088
		Sig. (2-tailed)	.476	.715	.937	.419
		N	87	87	87	87
	Are the professional leadership of the school able to identify the use of the entitlement?	Correlation Coefficient	.097	-.071	.140	-.050
		Sig. (2-tailed)	.316	.462	.146	.604
		N	110	110	110	110
	Goals well-defined and measurable	Correlation Coefficient	-.026	-.084	-.113	-.081
		Sig. (2-tailed)	.796	.398	.257	.416
		N	103	103	103	103

Achievement of goals and performance across process indicators

Spearman's rho		Goals are being achieved	Goals well-defined and measurable	Have staffing priorities been identified?	Validity and reliability of evaluation indicators ²⁸	Goals are feasible and realistic	Entitlement addresses priority needs of students	Entitlement allocated as planned by the school?
** Correlation is significant at the 0.01 level (2-tailed).								
* Correlation is significant at the 0.05 level (2-tailed).								
Goals are being achieved	Correlation Coefficient	1.000	.413(**)	.334(**)	.347(*)	.395(**)	.377(**)	.384(**)
	Sig. (2-tailed)	.	.000	.002	.013	.000	.000	.000
	N	87	87	87	51	80	83	86
Goals well-defined and measurable	Correlation Coefficient	.413(**)	1.000	.305(**)	.682(**)	.594(**)	.450(**)	.377(**)
	Sig. (2-tailed)	.000	.	.002	.000	.000	.000	.000
	N	87	103	103	55	93	96	93
Have staffing priorities been identified?	Correlation Coefficient	.334(**)	-.305(**)	1.000	.243	.189	.112	.163
	Sig. (2-tailed)	.002	.002	.	.074	.069	.279	.118
	N	87	103	105	55	93	96	93
Validity and reliability of evaluation indicators	Correlation Coefficient	.347(*)	.682(**)	.243	1.000	.449(**)	.423(**)	.079
	Sig. (2-tailed)	.013	.000	.074	.	.001	.002	.572
	N	51	55	55	55	52	53	53
Goals are feasible and realistic	Correlation Coefficient	.395(**)	.594(**)	-.189	.449(**)	1.000	.420(**)	.399(**)
	Sig. (2-tailed)	.000	.000	.069	.001	.	.000	.000
	N	80	93	93	52	93	90	87
Entitlement addresses priority needs of students	Correlation Coefficient	.377(**)	.450(**)	.112	.423(**)	.420(**)	1.000	.178
	Sig. (2-tailed)	.000	.000	.279	.002	.000	.	.094
	N	83	96	96	53	90	96	90
Entitlement allocated as planned by the school?	Correlation Coefficient	.384(**)	.377(**)	.163	.079	.399(**)	.178	1.000
	Sig. (2-tailed)	.000	.000	.118	.572	.000	.094	.
	N	86	93	93	53	87	90	93

²⁸ Based on a subset of the population

Comparison by school type

Note that the percentages, particularly for secondary schools, should be interpreted with caution due to the small number of schools.

Question 1: People in the school who are aware of the existence of the additional teaching entitlement allocated through the Staffing Review.

Type of school	Aware of the entitlement - Principal					
	Yes		No		Total	
	N	%	N	%	N	%
Primary (incl intermediate)	75	90.4	8	9.6	83	100.0
Secondary	26	96.3	1	3.7	27	100.0

Type of school	Aware of the entitlement – Teaching staff employed through the staffing entitlement					
	Yes		No		Total	
	N	%	N	%	N	%
Primary (incl intermediate)	34	41.0	49	59.0	83	100.0
Secondary	5	18.5	22	81.5	27	100.0

Type of school	Aware of the entitlement – Board members									
	None		A Few		Many		All		Total	
	N	%	N	%	N	%	N	%	N	%
Primary (incl intermediate)	31	37.3	20	24.1	12	14.5	20	24.1	83	100.0
Secondary	9	33.3	11	40.7	3	11.1	4	14.8	27	100.0

Type of school	Aware of the entitlement – Staff									
	None		A Few		Many		All		Total	
	N	%	N	%	N	%	N	%	N	%
Primary (incl intermediate)	37	44.6	20	24.1	11	13.3	15	18.1	83	100.0
Secondary	13	48.1	6	22.2	3	11.1	5	18.5	27	100.0

Type of school	Aware of the entitlement – Students									
	None		A Few		Many		All		Total	
	N	%	N	%	N	%	N	%	N	%
Primary (incl intermediate)	82	98.8	0	0.0	0	0.0	1	1.2	83	100.0
Secondary	24	88.9	3	11.1	0	0.0	0	0.0	27	100.0

Type of school	Aware of the entitlement – Parents									
	None		A Few		Many		All		Total	
	N	%	N	%	N	%	N	%	N	%
Primary (incl intermediate)	76	91.6	4	4.8	1	1.2	2	2.4	83	100.0
Secondary	23	85.2	4	14.8	0	0.0	0	0.0	27	100.0

Question 2: People in the school who are aware of how the additional teaching entitlement has been allocated in this school

Type of school	Knowledge of the use of the entitlement – Principal					
	Yes		No		Total	
	N	%	N	%	N	%
Primary (incl intermediate)	73	88.0	10	12.0	83	100.0
Secondary	25	92.6	2	7.4	27	100.0

Type of school	Knowledge of the use of the entitlement – Teaching staff employed through the staffing entitlement					
	Yes		No		Total	
	N	%	N	%	N	%
Primary (incl intermediate)	39	47.0	44	53.0	83	100.0
Secondary	5	18.5	22	81.5	27	100.0

Type of school	Knowledge of the use of the entitlement – Board members									
	None		A Few		Many		All		Total	
	N	%	N	%	N	%	N	%	N	%
Primary (incl intermediate)	35	42.2	19	22.9	14	16.9	15	18.1	83	100.0
Secondary	14	51.9	7	25.9	3	11.1	3	11.1	27	100.0

Type of school	Knowledge of the use of the entitlement – Staff									
	None		A Few		Many		All		Total	
	N	%	N	%	N	%	N	%	N	%
Primary (incl intermediate)	36	43.4	22	26.5	11	13.3	14	16.9	83	100.0
Secondary	14	51.9	5	18.5	2	7.4	6	22.2	27	100.0

Type of school	Knowledge of the use of the entitlement – Students									
	None		A Few		Many		All		Total	
	N	%	N	%	N	%	N	%	N	%
Primary (incl intermediate)	81	97.6	0	0.0	0	0.0	2	2.4	83	100.0
Secondary	24	88.9	3	11.1	0	0.0	0	0.0	27	100.0

Type of school	Knowledge of the use of the entitlement – Parents									
	None		A Few		Many		All		Total	
	N	%	N	%	N	%	N	%	N	%
Primary (incl intermediate)	70	84.3	6	7.2	1	1.2	5	6.0	83*	100.0
Secondary	23	85.2	3	11.1	1	3.7	0	0.0	27	100.0

* Data for one school was missing.

Question 3: Use of the additional entitlement by the school:

Type of school*	Use of the entitlement									
	Employ new staff		Previously funded by ops grant		Maintain staffing levels		Increase hours of part-time staff		Other	
	N	%	N	%	N	%	N	%	N	%
Primary (incl intermediate)	32	38.6	13	15.7	5	6.0	16	19.3	6	7.2
Secondary	13	48.1	6	22.2	3	11.1	3	11.1	3	11.1

* Percentages are based on the total number of schools, ie 83 primary and 27 secondary schools, and will not add up to 100%.

Type of school	Employment of new teaching staff													
	.1	.2	.3	.4	.5	.8	1.0	1.3	2.0	2.5	2.9	3.0	3.2	Total
Primary (incl intermediate)	5	8	2	11	2	1	2	0	1	0	0	0	0	32
Secondary	0	1	0	0	0	2	4	1	0	2	1	1	1	13

Type of school	Charge against entitlement teaching staff previously charged against operations funds									
	.1	.2	.3	.4	.5	.6	.9	1.0	1.7	Total
Primary (incl intermediate)	4	1	1	6	0	1	0	0	0	13
Secondary	0	1	0	1	1	0	1	1	1	6

Type of school	Maintenance of staffing levels following roll reductions					
	.1	.3	1.0	1.3	2.0	Total
Primary (incl intermediate)	2	1	1	1	0	5
Secondary	0	0	2	0	1	3

Type of school	Increased hours of part-time staff						
	.1	.2	.3	.4	.5	.7	Total
Primary (incl intermediate)	3	4	3	5	1	0	16
Secondary	0	0	0	0	2	1	3

Type of school	Other			
	.1	.7	1.0	Total
Primary (incl intermediate)	6	0	0	6
Secondary	0	1	2	3

Question 4: Identification by the professional leadership in the school (without prompting) what the additional teaching staff entitlement is being used for

Type of school	Is the professional leadership of the school able to identify the use of the entitlement?					
	Yes		No		Total	
	N	%	N	%	N	%
Primary (incl intermediate)	56	67.5	27	32.5	83	100.0
Secondary	13	48.1	14	51.9	27	100.0

Question 6: Has a process been developed for measuring these indicators

Type of school*	Process been developed for measuring indicators					
	Yes		No		Total	
	N	%	N	%	N	%
Primary (incl intermediate)	36	43.2	14	16.7	83	100.0
Secondary	6	22.2	2	7.4	27	100.0

*Data is missing for 33 primary schools and 19 secondary schools, generally as a result of the absence of indicators.

Question 13: Goals are well defined and measurable

Type of school*	Goals well-defined and measurable									
	Not defined		Some definition, difficult to measure		Adequately defined		Well defined and measurable		Total	
	N	%	N	%	N	%	N	%	N	%
Primary (incl intermediate)	19	22.9	26	31.3	15	18.1	17	20.5	83	100.0
Secondary	11	40.7	3	11.1	8	29.6	4	14.8	27	100.0

*Data is missing for six primary schools and one secondary school.

Appendix 3

Measures, signs, or indicators of effectiveness of the way in which staffing has been allocated identified by the school.

Indicator	Secondary Schools (number)	Primary Schools (number)
Student achievement data	5	18
Reporting to Board of Trustees	1	1
Informal sharing of information evidence	1	4
Performance appraisal system		8
Reporting through progress in Individual Education Plan (IEP)		1
Programme evaluation		1

Appendix 4 Evaluation synthesis template provided to review officers



Additional teaching staff Review Officer Synthesis Sheet

School: _____	Profile No: _____	Date: _____
Review officer: _____		
Senior review officer: _____		
Evidence collection codes:	Classroom observations	O
	Interviews with teaching staff	T
	Interviews with students	S
	School/classroom documentation	D
	Samples of student work	W
	Interviews with the principal	P
	Interviews with the board	B
	Interviews with parents/community	C
Additional staffing entitlement received by the school for the 2004 year: _____		
Additional staffing entitlement received by the school since 2000 (information has been supplied to ERO Area office by A&P): _____		

Section A Background questions

1. Who in the school is aware of the existence of the additional teaching entitlement allocated through the Staffing Review?

Please indicate all that are applicable

Principal

Teaching staff employed as a result of the entitlement

Board members

All	Many	A few	None

Teaching staff generally

--	--	--	--

Students

--	--	--	--

Parents/whānau/community

--	--	--	--

2. Who in the school is aware of *how* the additional teaching entitlement has been allocated in this school?

Please indicate all that are applicable

Principal

Teaching staff employed as a result of the entitlement

Board members

All	Many	A few	None

Teaching staff generally

--	--	--	--

Students

--	--	--	--

Parents/whānau/community

--	--	--	--

3. Has use of the additional entitlement by the school resulted in:

Please indicate the allocation of FTTEs to all that apply

FTTEs

The employment of new teaching staff (part or full-time)?

Charge against entitlement teaching staff previously charged against operations funds?

Maintenance of staffing levels following roll reductions?

Increase hours of part-time staff?

Other _____

Section B What is the entitlement being used for and why?

This section requires you to gather and report information directly from the school.

‘Programme theory’ refers to the rationale or logic used by the school to link activity/activities (the ‘programme’) resulting from the additional teaching staff resource with the intended goals of the programme.

You will need to collaborate closely with the school to answer the following questions. These questions could be used as the basis of interview questions. It is expected that you will need to talk to more than one person/position (i.e. principal/board member/teaching staff) to verify that a shared understanding exists in the school around what the additional teaching staff resource is being used for and why. If a shared understanding does not exist, please indicate this.

Please indicate the sources of evidence investigated for this section:

T	S	D	P	B	C
---	---	---	---	---	---

4. Are the professional leadership in the school able to identify (without prompting) what the additional teaching staff entitlement is being used for?

Yes / No

5. If no, what are the reasons given for the difficulty in identifying? (e.g. way in which the entitlement is delivered, unaware of expectations around use of entitlement, size of overall FTE increase etc)

If no, please work with the school (through prompting and investigative questioning) to answer the questions that follow.

6. How is the additional teaching staff entitlement being allocated over the 2004 year?

Describe the types of activities that staffing entitlement has been allocated for. <i>(please indicate if this is a new (N) activity, or a continuation/enhancement (C) of a previously existing activity carried out by teaching staff)</i>	What are the intended outcomes/goals of the activity/activities?

Section C Evaluating the programme theory

To what extent is it reasonable to have allocated the entitlement in this way?

The purpose of this section is for you to evaluate the extent to which you believe the school's rationale and intended process for allocating the additional teaching entitlement (as outlined in Section A and B) is valid and reasonable. If a school has allocated additional teaching staff entitlement to more than one individually identifiable set of activities please complete Section C and D for each one. A shorter version of this Synthesis Sheet document, including only Section C and D, is available on the intranet for this purpose.

The questions below are intended to provide a framework for your evaluative thinking.

Please provide comment with each question to indicate the rationale on which you have based your evaluative judgement. If you are unable to provide a rationale, please do not provide a judgement.

NB: Judgement scale - 1 is low, 4 is high

15. To what extent are the goals and objectives of the way in which the additional entitlement has been allocated **well defined** and measurable?

Goals not defined and, therefore, unable to be measured				Well defined and measurable goals
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1	2	3	4	

Rationale

16. To what extent are the proposed indicators/measures of the success of the way in which the additional entitlement has been allocated **valid and reliable**?

Indicators are not valid or reliable				Indicators are valid and reliable
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	2	3	4	

Rationale

17. To what extent are the goals and objectives of the way in which the additional entitlement has been allocated **feasible, and is it realistic** to assume that they can actually be attained as a result of a staffing allocation of this size?

Allocation goals and objectives are not feasible or realistic				Allocation goals and objectives are feasible and realistic
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	2	3	4	

Rationale

18. To what extent is the way in which the additional teaching staff entitlement has been allocated address the *priority needs* of students?

Activities do not address priority needs of students				Activities address priority needs of students
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1	2	3	4	

Rationale

20. What (if any) unintended side-effects can be observed?

Yes / No (please circle)

If yes, please outline below

(Please indicate if you believe the side-effect to be negative or positive).

Effectiveness of the way in which the additional entitlement has been allocated

21. To what extent are the **goals** of the way in which the additional entitlement has been allocated being achieved?

No goals being achieved				All goals being achieved
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1	2	3	4	

Please describe all observed goals achieved and/or currently being progressed effectively.

Please outline the evidence/indicators of effectiveness on which this judgement has been based.

Appendix 5 Issues for an evaluation of the impact of additional staffing

1.0 Introduction

The purpose of this paper is to canvas some of the issues that must be addressed in the design of an evaluation of the impact on student outcomes of additional teachers provided through the School Staffing Review.

There is widespread acknowledgement that this impact is difficult to measure. This paper:

- identifies the key research question
- outlines the challenges for the design of an evaluation to answer the question
- canvases some options
- recommends an approach to the evaluation and some revised research questions.

The issues have been identified through a limited set of key informant interviews. A list of informants is attached as Appendix 6. Interviews have been followed by a brief review of relevant research.

2.0 Research question

Ideally, this evaluation should answer the question ‘What impact has the increased teaching resource provided to schools had on student outcomes?’

3.0 Issues that pose challenges for the evaluation design

A ‘blunt instrument’

Although there is conflicting evidence as to whether and how additional resources support improved student outcomes²⁹, a major US meta-analysis looking at the application of extra money in schools showed that it was not the resource itself that made a difference to student outcomes, but how it was applied.³⁰

The additional staffing provided through the staffing review is a ‘blunt instrument’, in that there is a complete lack of knowledge about how the resource will be applied.

There are innumerable options for using the additional staffing resource, some of these could include:

- directed towards priority learning areas
- to provide additional teacher release time
- coverage for professional development
- to broaden the curriculum by offering new subjects
- to enhance guidance and pastoral support
- to reduce teacher:student ratios

The lack of parameters around the use of the resource, and the wide range of options open to schools is a challenge for a research design.

²⁹ Hanushek E. The impact of differential expenditure on school performance. *Educational Researcher* May 1989

³⁰ Hedges LV, Laine RD, and Greenwald R. A meta-analysis of the studies of the effects of differential school inputs on student outcomes. *Educational Researcher* 1994

A small effect

Review of the research evidence suggests that the impact on student achievement of additional teaching resources of the magnitude provided through the staffing review is likely to be small.

Small effects are difficult to measure, particularly in an environment where other variables cannot always be controlled. In particular, small effects are hard to detect with gross indicators such as a national achievement data (NCEA) or large scale survey data (TIMSS or PISA).

Causality

There are major difficulties in attempting to isolate a small effect, such as might be anticipated from the additional staffing provided under the Staffing Review, from the impact of other initiatives in place to improve student achievement. For example, the current emphasis on improving literacy and numeracy involves large-scale professional development projects, and in-school initiatives designed to improve student achievement in these areas. Isolating the effect of additional teachers on student performance, as distinct from the impact of these factors, is extraordinarily difficult.

Demographics

The primary sector is facing falling rolls; the secondary sector has embarked upon a limited period of growth in student numbers. Both of these conditions mean that schools' staffing rolls will be changing, and the increased resource provided by the staffing review may be masked. In the case of a primary school with a falling roll the increased resource may simply allow a school to maintain a base number of staff for longer than would otherwise be possible. A secondary school with a growing roll is likely to be focused on meeting the needs of a greater number of students, rather than deliberately applying the additional resource to meet the needs of existing students better.

Supply side factors

Evaluating the impact of additional teachers on student outcomes implies that teachers – of at least the quality as those already in position – are available to schools. It also assumes that if improvements in student achievement are targeted to particular curriculum areas – whether that is literacy or technology – that suitably trained and qualified teachers will be available.

Informants interviewed for this report indicated that these are assumptions that need to be questioned.

Teachers previously funded from operations grant or local funds

In addition to their staffing entitlement, some schools choose to fund teachers from their operations grant or local funds. It may be that the additional teaching resource provided through the Staffing Review does not in fact result in extra teachers in schools, but that it centrally funds some resource that was previously funded by the school, and releases local funds for other purposes. This situation creates a further complexity for the evaluation in that it allows for an even wider range of potential pathways (ie, the other things this money is then spent on) for the additional resource to impact on student achievement.

4.0 Possible outcome measures

Student achievement

In secondary schools the commonly used measures of student achievement are performance in School Certificate, University Bursary, unit standards and NCEA. In primary schools there is no national assessment data available for all students, but a growing bank of achievement data has been collected through the National Education and Monitoring Project (NEMP).

Logic suggests that any improvement in student achievement should be reflected in these indicators. The difficulty for this evaluation lies in establishing the contribution that additional staffing has made to any changes identified in these achievement measures.

Class size

Class size is one apparently obvious way to attempt to measure the impact of additional staffing in schools. The rationale behind using such an indicator is that student achievement is improved in smaller classes.

The *Report of the School Staffing Review Group* indicates that the Review Group was convinced of the contribution of class size reduction to improving student achievement. The Group notes in the Report that its view runs somewhat contrary to research evidence:

. . . the Review Group's belief that, contrary to widespread research opinion, class size reduction is beneficial in terms of student outcomes, both academic and social. (p11)³¹

Neither the informants interviewed for this report, nor the research evidence reviewed supports this assumption.

Eric Hanushek from the University of Rochester who has researched, written and is extensively quoted on the subject of the impact of class size on student achievement writes:

Existing evidence indicates that achievement for the typical student will be unaffected by instituting the types of class size reductions that have been recently proposed or undertaken. The most noticeable feature of policies to reduce overall class sizes will be a dramatic increase in the costs of schooling, an increase unaccompanied by achievement gains. . . . broadly reducing class sizes is extraordinarily expensive and based on years of research and experience, very ineffective.³²

Evidence Hanushek cites for his conclusion includes:

- national assessment results from the US show 17 yr old students performing comparably in 1970 and 1996 despite a 35% reduction in student:teacher ratios in that time
- international comparisons show student achievement unrelated to student: teacher ratios
- econometric investigations show no relationship between class size and student achievement
- the often-cited support for the thesis given by project STAR in Tennessee only supports the positive impact of class size for the youngest age groups
- research evidence lends much more support to the impact of teacher quality than class size.

³¹ *Report of the School Staffing Review Group*. 2001

³² Hanushek E. The evidence on class size. Thomas B Fordham Foundation.

<http://www.excellence.net/library/size.html>

John Hattie's review of the evidence leads him to similar conclusions. In his inaugural address he wrote:

*Reducing class sizes from the 30s to the 20s is in the right direction, but there is little support for the claim that there are increases in student achievement or satisfaction, or teacher attitude or morale. Only when the class size reduces to 15 or below are there appreciable positive benefits.*³³

The 2000 literature review, *The effects of school resourcing on educational outcomes* that formed part of the Ministry's Strategic Research Initiative, also found that teacher:student ratio had no consistent effect on educational outcomes. The authors did find that the *quantitative* of education was positively related to test scores and other outcome measures. They concluded that after controlling for student characteristics the effect of an additional year of education on test scores and post-education income was around 5-10%.³⁴

The Scottish Council for Research in Education commissioned a review of evidence of the effects of class size on styles of teaching practice, pupil behaviour and attainment. Their conclusions, which are slightly more encouraging, although not entirely inconsistent with those earlier cited, were that reductions in class size below 20 pupils to one teacher was associated with improvements in pupil achievement particularly in the early stages of a child's schooling.³⁵

Another issue to be taken into account is the difficulty of measuring class size and changes in class size over time. Especially difficult in secondary schools where classes are changing in their size/configuration/absence rates by the hour.

Teacher quality

Whether additional staffing resource can be applied to improve teacher quality is by no means clear, although applying the resource to allow for increased teacher professional development is one pathway by which this could happen.

In support of informants' intuitive sense that teacher performance has an important influence on student outcomes, there appears to be a significant body of research which supports the impact of teacher quality on student achievement.

In his inaugural address, John Hattie's review of the evidence led him to conclude that characteristics of quality teaching are among the most powerful influences on student achievement. In particular, he identified the single most powerful moderator that enhances achievement as feedback. Quality feedback, he defines as information on how and why the student understands or misunderstands and clarification what needs to happen for the student to improve. Other characteristics of teacher performance Hattie identifies as having an above average effect on student performance are instructional quality, instructional quantity and class environment.

Linda Darling-Hammond leading US researcher on the impact of teacher quality on student achievement found strong evidence that some characteristics of teacher quality are strongly correlated with student achievement, and furthermore are much more strongly related than other factors such as class size or overall spending.³⁶

³³ Hattie J. *Influences on student learning*. Inaugural lecture: Professor of Education, University of Auckland

³⁴ Norton P, Sanderson K, Booth T, Stroombergen A. (2000) *The effect of school resourcing on educational outcomes*. Ministry of Education

³⁵ Wilson V. (2002) Does small really make a difference? The Scottish Council for Research in Education.

³⁶ Darling-Hammond L Teacher quality and student achievement: a review of state policy evidence. *Education Policy Analysis Archives*. Vol 8(1) Jan 2000

5.0 Possible data sources

NCEA and other national achievement data

While a range of national achievement data currently exists and allows the performance of students at each school to be tracked over time, and NCEA data should become more readily available, these are very gross measures. Without a robust understanding of the mechanisms by which additional teachers will impact on achievement, and the ability to adequately control for other factors, no meaningful conclusions would be able to be drawn about what had caused any changes that were observed in these gross measures.

Payroll data

One possible impact of the additional teaching resource could be to change the profile of the teacher workforce, and in that way impact on student achievement. A comparison of the teacher workforce profile at the beginning and at the end of the period during which additional staffing was applied could provide some evidence for this impact. Such an analysis would need to take account of issues of teacher supply.

Benchmark data

Schools currently provide to the Ministry information which is then aggregated and sent back to them in the form of a comparison against schools of the same type, the same decile and in the same region. This benchmark data includes student achievement data as measured by performance in School Certificate and University Bursary, student retention statistics and leaver qualifications, as well as a range of school management data.

Education indicators

In 2002 the Ministry produced, for the first time, a set of education indicators designed to report on the health of the New Zealand education system. The indicators report is a first attempt to pull together those statistics which, if compared over time, will give information about the performance of the education system. In the area of student achievement, the indicators are largely drawn from data collected through the National Education Monitoring Project (NEMP), the Programme for International Student Assessment (PISA) and the Third International Mathematics and Science Study (TIMSS)

Planning and reporting data

It was suggested prior to the interviews with informants, that the new planning and reporting requirements might provide a data set which could be used to measure the impact of additional staffing. This view was not supported by informants.

While there is a strong focus on student achievement, the new planning and reporting requirements have been designed to allow schools to report on matters, and in ways, that are meaningful to them. There is no template for data which will be collected from all schools, and schools are likely to report in such a range of ways aggregation of data will be difficult. It may be possible to extract some aggregate information about the areas of focus for school's achievement goals, or about target groups, but beyond this there is little potential for the extraction of quantitative data.

The plans submitted by individual schools could form part of the data for a case study approach.

6.0 Related Ministry projects

The Ministry is currently seeking for research into the feasibility of multivariate analysis of school factors relating the achievement. The types of factors to be examined for a relationship to student achievement include socio-economic status, student mix, school characteristics, resourcing, and teacher data.³⁷

7.0 Recommendations for the direction of the evaluation

A quantitative research design is most appropriate when there is a clear and common understanding of what is to be measured and a need to have better information about the amount or extent of the activity, behaviour or change. A qualitative design is indicated when the area of enquiry is poorly understood and there is debate about the indicators that should be used for evaluation.

Bill Rowan of the University of Michigan cautions against the use of large-scale survey research in measuring teacher effects on student achievement unless the measures are well understood. At the conclusion of his detailed paper about the methodological difficulties of measuring teacher effects he writes:

*Without good measures no amount of statistical or experimental sophistication will lead to valid inferences about instructional effects on student achievement, and even with good measures, sound causal inference procedures are required.*³⁸

There was agreement amongst those interviewed for this report that the first step in any evaluation of the impact of additional staffing should be to get a much better understanding of how the additional staffing resource has been applied. In particular, what objectives underpinned the allocation of the resource, and how those objectives relate to student achievement.

One option for the initial phase of the evaluation is regular, in-depth interviews with a range of schools, focusing on staffing decisions, the factors that influence those decisions and the outcomes measures schools use to assess the value of the decisions. This could serve as a scoping or feasibility phase to determine what indicators could be used for a subsequent quantitative phase of the evolution.

Revised research questions

1. Are schools aware of the additional teaching resource entitlement allocated through the Staffing Review?
2. How has additional teaching resource been applied in the last 12 months?
3. When the school is allocated additional teaching resource how are the decisions made regarding how that resource should be applied?
4. What influences the decisions regarding application of teaching resource?
5. How do schools believe teachers have an impact on student achievement? (eg teacher time per student, teaching ability; subject knowledge etc)
6. Do, and if so how do, schools measure the impact of teachers on student achievement?

Helena Barwick
March 2003

³⁷ Ministry of Education (2003) *Request for proposals: The feasibility of multivariate analysis of school factors relating to achievement*. Demographic and Statistical Analysis Unit.

³⁸ Rowan B. (2001) *What large-scale survey research tells us about teacher effects on student achievement*. Consortium for Policy Research in Education. Conceptual paper.

Appendix 6

People interviewed in the preparation of this report.

Martin Connelly
Cheryl Remington
Clair MacDonald
Tim McMahon