Comparison Variables Useful to Teachers in Analysing Assessment Results
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This report summarises views of focus groups of teachers about the types of comparisons they wish to make when making use of assessment results. The main types were: school decile, authority; and geographical location; gender; ethnicity, age group, Year level, and language background of the student; and the curriculum level(s) the student was at.

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Introduction

The University of Auckland has been contracted by the Ministry of Education to develop new literacy and numeracy assessment tools for use with students in Years 5 to 7, in English and in Maori.

These tools will extend the range of assessment tools currently available for use in primary schools. They will consist of a "bank" of closed and open-ended items, supplied to schools on CD-ROM. A programme will be included on the CD-ROM to help schools to analyse and aggregate student information. Use of the tools will be voluntary. The intention is to provide schools (teachers, parents, and boards of trustees) with high-quality externally referenced information to help identify students' strengths and weaknesses in literacy and numeracy. The new tools are designed to provide valid and useful information on achievement patterns of whole groups or subgroups of students.

The tools will be developed in consultation with schools, and modified if necessary on the strength of feedback generated on the use of the assessment information.

The following research project is part of the consultative development process.

Aim and Objectives of the Research

The overall aim of the research was to determine what comparison variables teachers of Years 5 to 7 wanted to use to compare the children they are assessing with other children.

The specific objectives of the research were:
- to compile a list of comparison groups commonly used when analysing performance patterns in literacy;
- to find out which comparison groups are important to teachers of Years 5 to 7;
- to discover the reasons for teachers' choices of comparison variables;
- to determine how each of the comparison variables would be used by teachers and schools; and
- to ascertain the most effective means of comparing non-English-speaking back-

ground (NESB) children with those whose first language is English.

Method

Information was gathered in the following ways:

- Current reports on assessment were reviewed for information on comparison groups and variables. Literature and reports on assessment and children who have English as a second language were also reviewed.
- Face-to-face interviews were carried out with three key informants. One was known to have an in-depth knowledge of the range of comparison groups that it is appropriate to use in assessment. The other two informants were known to be knowledgeable about children with English as a second language.
- E-mail contact was made with four key informants. Three were asked about commonly used comparison groups. One informant was asked about the most effective means of comparing children with English as a second language.
- Focus groups were held with teachers and senior management from five schools. Schools were purposefully selected from the "asTTle" database. The selected contributing schools, full primary schools, and one intermediate school included the range of low-, medium-, and high-decile schools.

Focus group participants included: teachers of Years 5 to 7 classes; teachers of Year 8 classes; one teacher of a Year 4 and 5 class; and senior management. Groups ranged in size from 4 to 12 participants. There were 35 participants in total. Of these, 9 were of Pacific Island nations descent, 5 were Maori, and the remaining 21 were Pakeha/European.

Summary of Findings

Comparison Variables Wanted by Teachers

Teachers and senior management named 11 different categories of comparison variables that they would use when comparing their students with others. These were: school decile rating; geographical location of the school; gender of the student; ethnicity of the student; Year level of the student; age group of the student; curriculum level(s) the student was at; school authority; whether the student was from a non-English-speaking background; students' scores on standardised tests; and international comparisons.

The comparison variables would be used mainly for 12 purposes: reporting to the board of trustees; reporting to parents and the community; reporting to staff; feedback to students; evaluating school performance; evaluation or appraisal of teachers' performance; planning assessment and/or diagnostic programmes; improving and/or targeting staff training; strategic planning and/or trend analysis; targeting literature purchasing; and targeting resourcing and support systems.

Table 1, on the next page, presents the comparison variables and the ways in which each of these variables would be used. In the table, "Yes" in the cell indicates that the variable on the left would be used in the way described above.

Overall Use of Information from Comparisons

Most teachers said they would like to use the information derived from assessment items diagnostically to determine what the student is able to do and what they need to do next.

Teachers would also use information from a range of comparisons to identify the extent to which school achievement objectives were being met. This information would be used in reporting to the board of trustees and the school community. One teacher commented that this was an accountability measure for both the principal's and the school's performance.

Comparisons were also regarded as useful in: training staff to analyse student outcomes in order to adjust the teaching programme; training staff to target at-risk students; strategic resource planning; identifying gifted students for accelerated learning; ensuring that special needs policies are carried out; and making decisions about the purchase of resources.

Table 1

Comparison Variables and How They would be Used by Teachers

Comparison Variables	Ways in which Comparison Variables would be Used											
	Reporting to board of trustees	Reporting to parents and community	Reporting to staff	Feedback to students	Evaluating school performance	Teacher appraisal/ evaluation	Diagnostic assessment	Programme planning/ improvement	Targeting staff training	Strategic planning/ trend analysis	Targeting literature purchasing	Targeting resourcing/ support systems
School Variables												
School decile	Yes	Yes	Yes		Yes			Yes				
Geographical location	Yes	Yes								Yes		
School authority		Yes										
International comparisons		Yes				Yes						
Student Variables												
Gender	Yes					Yes		Yes		Yes	Yes	Yes
Ethnicity	Yes	Yes	Yes		Yes		Yes	Yes		Yes	Yes	Yes
Year levels		Yes					Yes	Yes				
Age group		Yes					Yes	Yes		Yes		Yes
Curriculum level(s)	Yes	Yes		Yes		Yes	Yes	Yes	Yes			Yes
Non-English-speaking background		Yes			Yes		Yes	Yes				
Standardised test results		Yes										

Comparison Variables Regarded as Important to Teachers and How They would be Used

School decile. School decile is a measure of the socio-economic status (SES) of the school community. The suggested ranges of school decile ratings were: low SES = deciles 1 and 2, middle SES = deciles 3–7, and high SES = deciles 9 and 10.

Some teachers said they would like to know how their students were achieving nationally compared to students in other schools, both similarly and differently rated on the socio-economic decile index. One person considered this was important in gaining a "global picture" of school performance. This information would be used in reporting to the board of trustees, community, and staff on school performance.

Other teachers said that they would only compare their students with students from schools in the same decile range. The aim would be to see whether their school was achieving poorer outcomes, and, if so, in which areas. They would then investigate why and target these areas for improvement.

A few teachers thought that comparisons by school decile rating would be useful in challenging the assumption that students from high-decile schools achieve better than those from schools in lower socio-economic areas. Comparisons would be an aid for teachers in targeting their programmes towards realistic expectations.

Geographical location of schools. A few teachers said they would like to be able to compare the outcomes of students in their school with those of students in any school, anywhere in New Zealand. Other teachers would just like to compare their students' outcomes with those of students from schools in areas with a similar socio-economic make-up.

This information would be used in reporting to boards of trustees and parents, and for strategic planning by management teams.

Gender. Some teachers were interested to know whether "the myths were right about the differences between girls' and boys' performances". The results of comparisons would be used to evaluate and adjust teaching styles.

Other teachers would like to find out whether girls were underachieving and if so at what level and at what stage.

Gender comparisons would also be used in reporting to boards of trustees, planning class composition, ensuring both genders are catered for in the teaching programme, and targeting the purchasing of literature and targeting appropriate support systems.

Ethnicity. Information from ethnic comparisons would be used to analyse how students were achieving relative to others of the same ethnic background and others from different ethnic backgrounds. In some instances teachers were keen to compare their students from minority groups against others from both similar and different minority groups. Possible comparisons included:

- Maori, Pacific, Asian, and European;
- Maori/Non-Maori;
- Pacific/Non-Pacific;
- Maori by socio-economic group;
- Maori boys/Maori girls;
- Pacific Island nation students, including Fijian, Samoan, Cook Islands, and Niuean.

Some schools were interested in tracking Maori and Pacific students from Year 5 to Year 7 in order to analyse trends over time.

One person said that information from ethnic comparisons would be used in determining whether an achievement objective for the school (i.e., that there should be no difference in outcomes for students from different ethnic groups) was met.

Comparisons of Maori boys with Maori girls would be used to promote improvement in the achievement of Maori students as required by the National Administration Guidelines (NAGs). Comparative results could be used with information from consultation with the Maori community to plan resourcing, such as the employment of extra teachers in order to reduce class sizes. The aim would be to enable an individual to focus on literacy and numeracy skills for the target group.

Some teachers were interested in ethnic comparisons only with other schools that have a

comparable ethnic composition. Comparative information could be used to help identify whether "the teaching programme was appropriate or whether it was disadvantaging a particular student group". This would inform staff, and it would also be important for reporting to parents, who often think that all students, regardless of ethnicity, will get a better deal in a high-decile school that is predominantly Pakeha.

Information from ethnic comparisons would generally be used for reporting to boards of trustees, parents, and local communities. One school said that ethnic comparisons would be used for classroom programme planning, to identify appropriate resourcing, and in the purchasing of appropriate literature. Comparisons would also be used to identify students at risk of failing. The information would be fed into the strategic planning process.

Year levels. Teachers would like to be able to compare Year 7 students in full primary schools with those attending intermediate schools, to let parents know that students in full primary do as well as students in intermediate schools.

Some teachers would like to know how their students are doing relative to others in their Year level, to see whether they are reaching the appropriate milestones. They would also like to compare assessment results of students by class group within the school and against the national average. This information is considered important for preparing the students to move up to the next Year level, and for *scaffolding* (building on) students' learning.

One teacher said it would be useful to compare each student in the class against all the others over a range of items, to examine the pattern of achievement in the class and so find out where the weaknesses in the class were by the Year level students were in.

There was also interest in comparing students against those in both higher and lower Year levels. This was considered to be potentially helpful in ascertaining "whether students were bright or struggling" and whether any were gifted or talented students.

Teachers, generally, would use Year level comparisons to improve their programme planning.

Age group. Teachers would like to compare their students with other students of the same age group, nationally, in order to be able to report to parents where their child is against a national average. This information was considered useful for showing parents whether their children's achievement levels fall within the norms for their age group.

Comparisons by age groups would also be used to group students for classroom activities, plan for the following year, and plan for extra support.

Teachers would also like to know if they were "on track" – that is, whether the students they were teaching were achieving outcomes comparable to those of other children of the same age. The information would be used to target programme areas for improvement.

In some instances it was considered useful to see where the student stood within the curriculum level band for their age group: early, middle, or late. These teachers would like to use the results to assess individual students' thinking skills for their class programme and to inform reports to parents.

Curriculum levels. Teachers wanted to compare students both individually and by class in terms of curriculum levels. The information would be used to determine which students needed extra support in particular areas; this information in turn would be used to modify teaching programmes.

Some teachers would like to assess student progress throughout the year by measuring individual student results over the year against curriculum levels. Other teachers would like to track students' achievement levels in terms of the curriculum, over time from Year 5 to Year 7, in order to identify which areas of the curriculum need a greater long-term focus. Results would be used when reporting to students on their own progress, both individually and in comparison with others of a similar ethnicity, same gender, and similar school decile.

It was also considered useful to be able to compare curriculum levels by Year levels and by school deciles (both similar and different). This information would be used when reporting to parents and the board of trustees about how the students in each Year level are positioned in relation to those in other schools.

Teacher appraisal was also seen as a legitimate use for comparisons by curriculum level. Teachers said they could measure the students' achievement by class against the curriculum at the beginning of the year and again at the end. The results would be used in evaluating teachers' effectiveness within the school, as part of syndicate improvement.

Results of comparisons would also be used to target curriculum areas where delivery needs improvement, by focusing on professional development for teachers in these areas.

School Authority. Teachers (from state schools) commented that they would like to be able to check the results of their students against those of students in both private and religious schools, to clarify whether the public perception that these schools are "better" is true. Teachers at some schools commented that many parents are sending children past their school gates to private or religious schools in the belief that they are superior. They would like to have the figures to challenge these perceptions.

Non-English-Speaking Background (NESB) Students. It was important to teachers that they were able to compare their NESB students against other NESB students nationally. Some also thought it was important to compare their NESB students against mainstream students. In both instances, they would use the information to determine the stage their students were at in order to inform the teaching programme. Comparisons of NESB individual students were also said to be useful in making objective decisions about the potential of each student in specific curriculum areas.

Teachers said they would like to compare their NESB students with others across a range of other ethnicities and across a range of school deciles. The information would be used to improve the teaching programme, evaluate the student, and report to parents. One teacher said this information would be useful in looking at the suitability of the learning environment for NESB students – that is, whether they may learn better in an environment where majority-language speakers do not outnumber them.

Some teachers would only compare NESB students to those who meet the same funding criteria; for example, those in first year of residence in New Zealand. These teachers used funding classification criteria set by the Ministry of Education to assess NESB children, as outlined in Ministry *ESOL Resourcing Information* (Ministry of Education, 1997).

Standardised test results. Some teachers remarked that they were interested in how the results of the assessment tools compared with the results of nationally standardised tests, such as the PATs (Progressive Achievement Tests). They would use the information for reporting to parents.

International comparisons. One school wanted to be able to compare their students' achievement against a set of international benchmarks applicable to countries with similar school systems, such as Australia and the UK. The information would be used to report to prospective parents and new parents from overseas, and for political purposes.

Comparison Variables Commonly Used in Analysing Performance Patterns in Literacy Assessment

The following comparison variables were identified as those most commonly used to analyse the results of literacy assessment with students.

- Student gender.
- Ethnicity at an individual student level – for example:
  - Maori, non-Maori.
- Ethnicity at a school level – for example:
  - percentage of Maori children in the school: less than 10%, 10% to 30%, more than 30%;
  - percentage of Pacific Island children in the school: less than 5%, 5% or more.

- Student year level.
- Student curriculum level.
- Socio-economic status of the school, using the school's decile rating as a measure – for example:
  - low SES = deciles 1 and 2, middle SES = deciles 3–8, high SES = deciles 9 and 10 (NZCER analysis);
  - low SES = deciles 1–3, middle SES = deciles 4–7, high SES = deciles 8–10 (NEMP analysis).
- Individual child socio-economic levels based on parental occupation – for example:
  - LE index (1 to 6, with 7 for those on benefits);
  - New Zealand Socioeconomic Index of Occupational Status.
- School Authority – state, state integrated, private.
- Type of school:
  - full primary or intermediate;
  - single sex or co-educational.
- Geographical location of school – for example:
  - rural/urban;
  - rural/metro/isolated;
  - zone: Greater Auckland, other North Island, South Island;
  - size of community: urban area over 100,000, community of 10,000 to 100,000, rural area or town of less than 10,000;
  - local comparisons – same or similar suburb.
- School size – for example:
  - primary: small (up to 120 students), medium (up to 250 students), large (over 250 students);
  - intermediate: medium (up to 350 students), large (over 350 students).
- School size based on student numbers at the desired level:
  - fewer than 20 Year 4 students, 20 to 35 Year 4 students, more than 35 Year 4 students (NEMP);
  - fewer than 35 Year 8 students, 35 to 150 Year 8 students, more than 150 Year 8 students (NEMP).

- Language other than English (non-English speaking background, English-speaking background).

The Most Effective Means of Comparing Non-English-Speaking Background Children

Operational Definition

Respondents said it was important to create an operational definition for the terms English as a Second Language (ESL) and Non-English-Speaking Background (NESB) before evaluating student work. One person commented that there are many "murky" areas when defining ESL/NESB, and many incorrect definitions are currently used by classroom teachers.

Alternative Assessment

The general consensus among respondents was that comparing Non-English-speaking background (NESB) students with students from an English-speaking background was not appropriate. The need for an alternative type of assessment was emphasised, both in interviews with persons who have expertise in the area of NESB and in literature on this subject.

Respondents commented that in order to make effective comparisons between NESB students, assessment results in literacy should be analysed against those of students who meet similar criteria. That is, teachers should identify where the NESB child is on the spectrum of all NESB children.

One respondent commented, "Descriptive profiles involving stages of learning attained, of children who have English as second language or are from a Non-English-speaking background, should be placed on a continuum."

Another said

I am not sure how you can mix L1 (language one) and L2 (language two) learners together in the same list of variables, as ESL learners are moving up a somewhat different pathway (a second language pathway). If this is not recognised, then we have many ESL students failing when they might well be moving successfully and as could be expected along the L2 pathway. The issue is the one of consequential validity (Messick) – what will

be the impact on ESL students when they are told they are continually failing, and on their parents too ... and on schools' decisions to enrol ESL students in a competitive environment. Also, how can teachers be directed towards appropriate teaching and professional development unless second language pathways are recognised? ([That is], teachers may be directed to apply L1 teaching strategies and will have L1-based expectations which are not appropriate.)

McKay (1997) comments that those children who "must learn, and learn through, the majority language in order to participate socially and economically" (p. 163) should not be compared with those whose dominant language is the majority language. Development of a "proficiency continuum of second language growth (the principle of emergence)" (p. 169) is important rather than comparisons with majority-language speakers, where children who have English as a second language perform poorly.

Profiling

Respondents commented that a background profile of NESB children was important in informing assessment comparisons.

Characteristics of NESB learners need to be taken into account in determining their stage. Students can then be placed on a set of common reference profiles or standards (McKay & Scorino, 1991). See Appendix 1 for a list of criteria.

Examples of comprehensive definitions and/or guidelines for use in assessment include:

- The Ministry of Education ESOL Assessment Guidelines for use in assessing ESL/NESB students for funding purposes.
- The Australian NLLIA ESL Bandscales developed in order to map out second-language learning. The Bandscales define second-language communicative ability using a "horizontal model. They are not embedded in the literacy/school context" (McKay, personal communication, 17 October 2000).

Common Assessment

McKay (1997) stated that where common assessment for all learners is used there is a need to explore ways in which assessment practices can be modified to accommodate minority learners by:

- allowing extra time;
- administering tests orally;
- using an interpreter;
- modifying the format from narrative to short answer.

A further strategy is to provide an additional report to the standard one, giving an interpretation of or additional comment on the grade received.

Special Needs

Senior management at one of the schools involved in focus groups requested that their particular requirements regarding assessment tools for their students who have special needs should be outlined in this report. The requirements are outlined in Appendix 2.

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Appendix 1: Criteria Important in Profiling NESB Children

The following variables were said to be important to consider in the school context.

- Cognitive maturity of the learner. Cognitive maturity and language proficiency do not necessarily grow hand in hand, as, for example, older children will be beginning second language learning at a more mature stage of development.
- Learner's knowledge of the content under instruction. This includes knowledge of the subject area and background knowledge.
- Variables in the testing context, including degree of support from the teacher, teaching systems, and time allowed.
- Features of language development due to cultural and contextual differences.

Important considerations when compiling a full background profile of NESB children.

- Dominant home language use.
- Age on arrival at English-speaking school.
- Range and amount of educational experience.
- Fluency of spoken English relative to the home language.
- Levels of home literacy.
- Range of experience in English.
- Range of experiences in first language.
- Whether English has been part of the child's schooling in another country.
- How active the child's language is at school – e.g., Samoan speakers should be assessed in their own language as this is an active language.

- Parents' language background – for example:
  - both English-speaking;
  - one English-speaking;
  - neither English-speaking;
  - two different non-English languages (but speak in English as a default).
- The language older siblings use (this is important as it may not be English).
- The type of household (an extended family can provide encouragement for a language other than English).
- Whether born locally or overseas.
- Length of residence of the family in New Zealand.
- Language of education in the child's home country – e.g., children are educated in English in the Cook Islands but not in Cambodia.
- Movement to and from the home country and the extent to which that reinforces the home language.
- Identity factors including the overall length of community history – that is, whether groups identify New Zealand as home.
- Whether home language script is phonetic or not (e.g., it can take 2–3 years longer to learn to write in Chinese than in English).

Appendix 2: Special Needs

Staff at one school said they would like to see a range of assessment tools developed for their students who have special needs. Staff stated that they would like a recommendation made to this effect. This school has a high number of students who are classified under Section 9 of the Education Act as having serious learning problems.

The particular needs of these students as visual and audial learners could be met by:

- interactive assessment tools on a CD-ROM;
- tools which students can respond to orally; and
- tools where students can type in the answers, as many have trouble forming letters.