My School

Guide to understanding ICSEA

acara AUSTRALIAN CURRICULUM ASSESSMENT AND REPORTING AUTHORITY

Guide to understanding ICSEA

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PART 1—MEASURING SOCIO-EDUCATIONAL ADVANTAGE

What is the Index of Community Socio-Educational Advantage?

Research shows that there is a strong relationship between the educational advantage a student has, as measured by the parents' occupation and level of education completed, and their educational achievement.

The Index of Community Socio-Educational Advantage (ICSEA) is a scale that represents levels of educational advantage. A value on the scale assigned to a school is the averaged level for all students in the particular school.

ICSEA provides visitors to the *My School* website with a means of making a comparison of the levels of educational advantage or disadvantage that students bring to their academic studies.

ICSEA does not describe or reflect the wealth of parents of students in a particular school or the wealth or resources of that school.

An ICSEA value is not a rating of the school institution—of its staff or teaching programs—nor is it a score for the school's overall student performance in testing programs

Why was ICSEA developed?

ICSEA was developed to enable fair and meaningful comparisons of the performance in literacy and numeracy of students in a given school with that of similar schools serving students with statistically similar backgrounds as part of the *My School* website.

How was ICSEA developed and how is it reported?

The development of ICSEA involved collecting student family background data and identifying, through the use of statistical models, the combination of variables that have the strongest association with student performance in the National Assessment Program—Literacy and Numeracy (NAPLAN) tests, and within that combined grouping, how much each of those variables contribute to performance in NAPLAN.

Every school has an ICSEA value on a scale which has a median of 1000 and a standard deviation of 100. ICSEA values range from around 500 (representing extremely educationally disadvantaged backgrounds) to about 1300 (representing schools with students with very educationally advantaged backgrounds).

The general distribution curve of all values is shown in Figure 1 below.

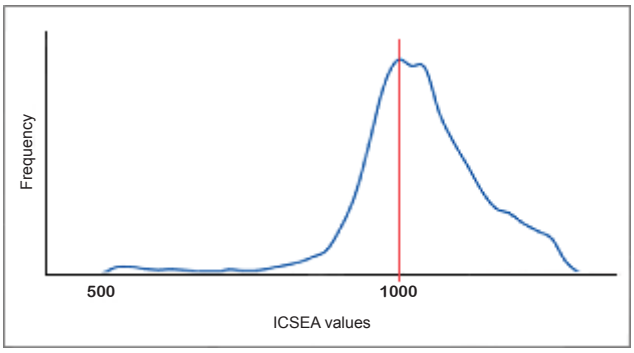

Figure 1. Distribution of all schools' values

Where is ICSEA used on the *My School* website?

There are three places where ICSEA values appear or are used on the *My School* website:

1. *School profile* page

Each school's ICSEA value can be found on the *School profile* page and is used in the calculation of the distribution of students table. This table, presented alongside the school ICSEA value, shows the distribution of students in a school across four quarters representing a scale of relative disadvantage ("bottom quarter") through to relative advantage ("top quarter"). The two middle quarters are combined on the table ("middle quarters"). This gives contextual information about the socio-educational composition of the school's student community.

Student background 2010

Index of Community Socio-Educational Advantage (ICSEA)

School ICSEA value	1116
Average ICSEA value	1000
Data source	Parent information

Distribution of students	Bottom quarter	Middle quarters		Top quarter
School distribution	7%	10%	31%	53%
Australian distribution	25%	25%	25%	25%

Percentages are rounded and may not add up to 100

Figure 2. Student background data on the *School profile* page

2. *Similar schools* page

A school's ICSEA value is used to select a group of up to 60 schools serving students from statistically similar backgrounds. This is referred to as the statistically similar schools group (SSSG). These schools can be located across Australia but, based on ICSEA, their students have similar levels of educational advantage. This is illustrated for two schools in Figure 3.

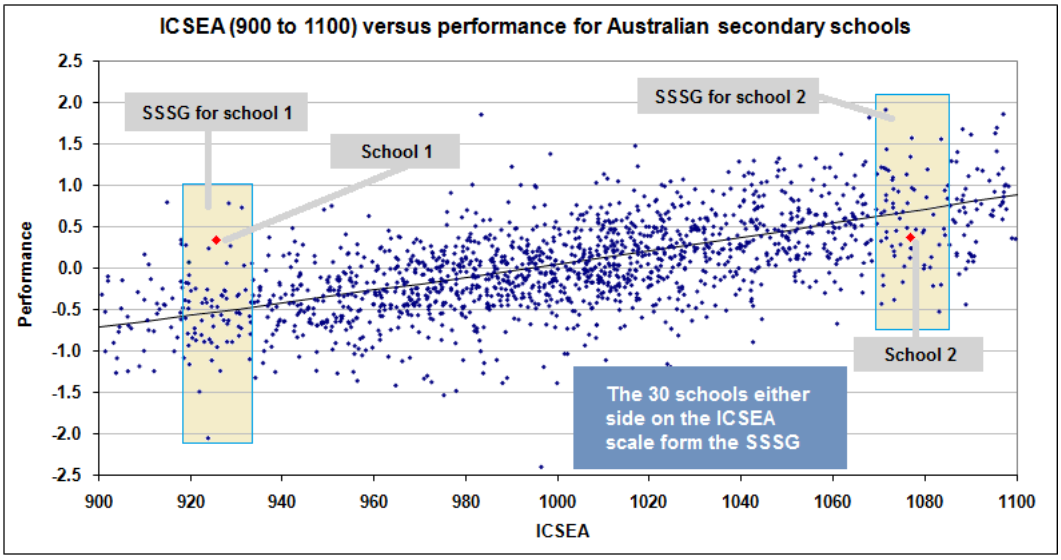

Figure 3. Creating a statistically similar schools group

The similar schools chart provides an opportunity to compare the results of this group of schools and to identify high performing schools, or to see where a school may seek to improve.

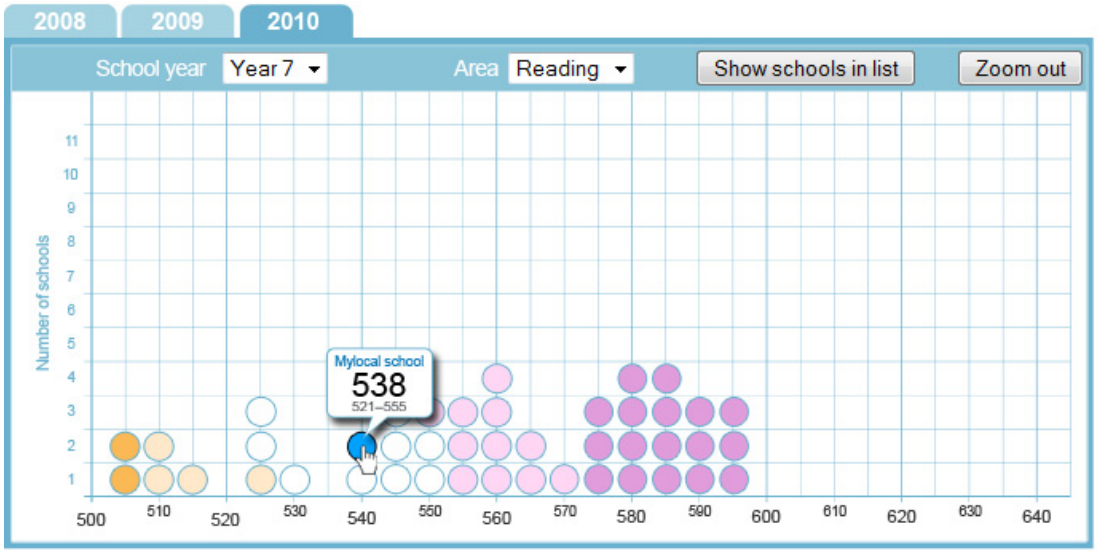

Figure 4. Depicting statistically similar schools group NAPLAN results

3. NAPLAN results comparisons

In the NAPLAN results section of *My School*, the selected school's results are shown alongside an average result for schools serving students from statistically similar backgrounds. The grouping of similar schools is based on the schools' ICSEA values.

Figure 5. NAPLAN results of selected school with statistically similar schools group results

Do all schools have an ICSEA value?

ICSEA values can be generated for all schools. However, schools that are categorised as special schools on the *My School* website do not have ICSEA values reported and are not included in statistically similar schools groups. Special schools are schools for students with disability and juvenile justice schools. An ICSEA value for these schools can still be provided or published on the website at the school's request.

How can ICSEA and *My School* be used to drive school improvement?

Schools can use the information on *My School* as a basis on which to:

- monitor performance and identify priority areas in which to focus improvement efforts;
- identify schools with students from statistically similar backgrounds that are performing at a high level, particularly in their priority areas;
- explore success factors in statistically similar high-performing schools across the country and incorporate relevant strategies into their improvement plans; and
- communicate with the wider school community about their performance and gain support for improvement initiatives.

Teachers can use the information on *My School* as a basis on which to:

- integrate the information from the website with system and classroom data and use this to develop intervention programs to support higher levels of student achievement in literacy and numeracy;
- determine where they need to make adjustments to teaching programs and strategies;
- connect with teachers in other schools to share ideas;
- compare the progress of their students with students in other schools; and
- engage with parents in support of their children's learning.

Parents and other members of the school community can use the information on *My School* as a basis on which to:

- understand how their local school is performing relative to other schools serving students from statistically similar backgrounds;
- gain a broader understanding of the learning environments and performance of schools in their local community, as well as within their State or Territory and across the nation;
- initiate communication with a school based on comprehensive and detailed information;
- seek a greater level of engagement with a school in support of their child's learning; and
- become involved in advocating for and supporting improvement initiatives within the school.

PART 2—CALCULATING ICSEA VALUES

What is the ICSEA formula?

ICSEA values were first published on the *My School* website at the end of January 2010. For the second version of the *My School* website the ICSEA, formula was revised and student-level data used to create a stronger measure of educational advantage.

At the request of Education Ministers, ACARA investigated the possibility of using student-level data, obtained directly from students' families, to calculate ICSEA, rather than indirect ABS census data.

The modelling indicated that by using direct student-level parent occupation and education data, it is possible to obtain a stronger measure of socio-educational advantage (SEA) in most cases.

The modelling also showed that including a variable related to language background increased the association of ICSEA with average school achievement.

Subsequently, Ministers approved the move to the direct data approach and the inclusion of language background of students for the 2011 release of *My School*.

The formula for ICSEA used on *My School* contains the following variables:

*ICSEA = SEA (direct/indirect) + Remoteness + Percent Indigenous + Disadvantaged LBOTE**

*(LBOTE combined with the percentage of parents with an education of Year 9 equivalent or below)

What information is used to develop the formula?

The construction of the SEA component of ICSEA for *My School* uses two alternative data sources:

- Information relating to parent occupation, school education, non-school education and language background obtained from student enrolment records (direct data)
- Australian Bureau of Statistics (ABS) census data (indirect data).

If the SEA value calculated using direct data is found to be within the acceptable confidence interval, the direct data is used in the formula. If the estimate is found to be less accurate, the indirect method is used. In the case of small schools, or schools with significant missing data, the indirect measure of SEA may give a better estimate than the direct measure.

The indirect method involves matching data for Census Collection Districts (CCD) collected by the Australian Bureau of Statistics and addresses from a school's enrolment records. CCDs cover on average 225 households.

For the indirect method the following steps are taken to calculate an ICSEA value for each school:

1. Addresses for each student at the school are gathered (without student names).
2. Each address is matched to its ABS Census Collection District.
3. The relevant SEA characteristics of the CCD in which each student at the school lives (known from ABS census data) are aggregated to the school level.

What are the variables used to develop the direct data methodology?

When enrolling a child in school all parents are asked which of the following options best describes their occupation, and the school education and non-school education levels they achieved.

Parent occupation

- Senior management in large business organisation, government administration and defence and qualified professionals
- Other business managers, arts/media/sportspersons and associate professionals
- Tradesmen/women, clerks and skilled office, sales and service staff
- Machine operators, hospitality staff, assistants, labourers and related workers
- Not in paid work in last 12 months

School education level

- Year 12 or equivalent
- Year 11 or equivalent
- Year 10 or equivalent
- Year 9 or equivalent or below

Non-school education level

- Bachelor degree or above
- Advanced diploma/Diploma
- Certificate I to IV (including trade certificate)
- No non-school qualification

All categories were considered in developing ICSEA. Of these categories, however, the following group of variables in combination were found to be the best predictors of achievement in NAPLAN. Therefore, they are the variables used in the calculation of the SEA component of ICSEA. Table 1 lists these variables, and the weight given to each variable in calculating ICSEA.

Variables	Weights used to calculate ICSEA
Occupation variables	
• Associate professional	.154
• Skilled non-professional	-.031
School education variables	
• Year 10 or equivalent	-.092
• Year 9 or equivalent or below	-.042
Non-school education variables	
• Bachelor degree or above	.364
• Advanced diploma/Diploma	.078
• No non-school qualification	-.196

Table 1. Direct data variables and weightings

How are the school variables weighted?

The school variables shown in Table 2 below are then added to this SEA component to produce the final ICSEA value. The SEA component has a weight of 0.670.

Variables	Weights used to calculate ICSEA
• Percentage of Aboriginal enrolments	-.355
• Accessibility/Remoteness index	-.005
• Percentage of disadvantaged LBOTE students	-.050

Table 2. School variables and weightings

What are the variables used to develop the indirect data methodology?

The indirect methodology is very similar to the 2009 calculation. A slightly amended formula has been used in the *My School* calculations since 2010. A number of redundant variables have been removed to create a simpler calculation. The variable of Indigeneity has been removed from the calculation of the SEA value, but remains within the ISCEA calculation with an increased weight.

Table 3 below shows the CCD variables (indirect data) used for the SEA component and their corresponding weights in the formula.

Variables	Weights used to calculate ICSEA
Education variables	
• Percentage of people aged 15 years and over with a certificate qualification (CERT)	-.123
• Percentage of people 15 years and over with no post-school qualifications (NOQUAL)	-.142
Occupation variables	
• Percentage of employed people who work in a skill level 4 occupation (OCC_4)	-.177
• Percentage of employed people who work in a skill level 5 occupation (OCC_5)	-.091
Others	
• Percentage of families that are one parent families with dependent offspring only (ONEPAR)	-.244
• Percentage of occupied private dwellings with no internet connection (NONET)	-.278

Table 3. CCD data sourced from the ABS

Can schools have confidence that the direct and indirect data are comparable?

To ensure the direct SEA measure and the indirect SEA measure are comparable they are placed on a common scale. These are then combined with the school variables in the ICSEA formula to calculate the ICSEA value for each school. Accuracy of the source data is ultimately the responsibility of parents who complete both ABS census forms and student enrolment information for their children.

PART 3—DATA COLLECTION & ANALYSIS

What processes have been undertaken to quality assure the new ICSEA methodology?

The ICSEA methodology has been revised by an expert panel that includes eminent academics external to ACARA. The panel supervised extensive statistical modelling to correlate family background data with NAPLAN data for hundreds of thousands of students.

ICSEA values for all schools are checked with State and Territory governments, Catholic education commissions, and independent schools and their associations. ACARA works closely with jurisdictions to review ICSEA calculations where data is not adequate or extraordinary circumstance mean the data does not properly reflect the background of students at an individual school.

A secure web-portal has also been set up to enable school principals to see their new values and how these were developed with reference to each of the variables used to calculate ICSEA, as well as an explanation of how each of the data assurance rules have been applied for each school. Information is also available for schools to request a review of their ICSEA value, which must be accompanied by additional data, and also includes support material to help schools and their communities gain a greater understanding of ICSEA. In addition, ACARA has reviewed data for all schools that have experienced a significant change in ICSEA values and has followed up with those for which there may be data issues or other factors that need to be taken into account in finalising the new value.

Where does the data used to calculate ICSEA values come from?

Parental background data are collected at enrolment. Most State and Territory Government jurisdictions and Catholic system jurisdictions have provided ACARA with the data for all students in their schools collected in this way.

For some non-government systemic schools and most independent schools, direct data were only available for students who participated in NAPLAN in 2009, 2010 and 2011, which were collected and provided to ACARA by the Test Administration Authority in each state.

In addition, ACARA identified around 400 schools where this direct data were insufficient and these schools were contacted to provide additional direct student data.

Does data collected at enrolment become out-of-date?

Even though parental background data is collected at enrolment and is unlikely to be updated during the time that a student is enrolled in a school, it remains reasonably accurate.

The school education level of parents will only change for the very few parents that undertake further secondary-level schooling through TAFE or an equivalent. The non-school education level will only change for the relatively small proportion of parents who undertake formal post-school education.

Although many parents are likely to change jobs during the time that their children are enrolled in a school, they are likely to remain within the same occupation category.

The one variable that may change is the 'Unemployed' variable. Many parents re-enter the workforce during the time that their children are enrolled in a school.

This is particularly so for those who have been full-time carers of pre school-aged children. Accordingly, the unemployed variable has not been used in the final calculation of the ICSEA.

Why has the change to direct data been made?

Analyses by the ICSEA Expert Panel convened by ACARA at the time when the new methodology was being implemented in 2010 found the use of direct student data increases the explanatory or predictive power of ICSEA from 59% to 68%. Therefore, the direct method provides an even stronger measure of educational advantage. This is because the formula changed from using CCD data (which, on average, contains aggregated information from about 225 households) to relying on individual household data taken from the parental background information for students enrolled only in the school.

Education Ministers determined that wherever possible student-level data on the occupation and education levels of parents or carers be used to calculate ICSEA, in place of CCD data.

What other changes have been made to the ICSEA methodology?

In 2009, the 14 CCD data variables in the SEA component of the ICSEA calculation included a measure of the Indigenous status of students. In 2010 and beyond, the SEA component does not include this measure because it has been determined that the percentage of Indigenous student enrolments in the school provides a more accurate measure than the inclusion of this variable in the indirect SEA component.

The ICSEA formula has since been further strengthened by the inclusion of a factor related to language background other than English (LBOTE). The measure of student LBOTE contributes to the calculation of an ICSEA value only when it is combined with a measure of students' parent or carer education level. This combined variable is used in the calculation of an ICSEA value where LBOTE students have parents or carers who have completed school education up to or equivalent to Year 9. This is referred to as disadvantaged LBOTE in the formula.

In 2011, efforts were made to improve the quality of the data, and in particular to obtain sufficient data to enable direct ICSEA calculations in respect of schools which previously could only be allocated an indirect ICSEA value. As ACARA receives additional data each year, either directly from schools or from Test Administration Authorities, we are able to compute new ICSEA values.

In addition, a number of decision rules have been established by the independent ICSEA Expert Panel to ensure that information from 2010 and 2011 can be combined appropriately to calculate 2012 ICSEA values. These rules were established to both maximise the use of data and to ensure that ACARA is able to draw on as much available information from across 2010 and 2011 as possible.

Where can I find out more about ICSEA?

If you wish to learn more about the construction of ICSEA please consult the *2010 ICSEA Generation Report*, available on the *My School* website.

www.myschool.edu.au

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