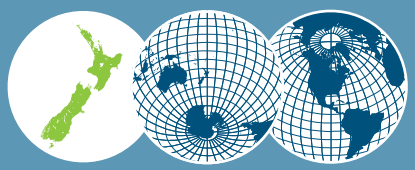
Michelle Lamy with Steve May

OECD

PISA2012

Series on the Learning Environment, Volume III

Student behaviour



MINISTRY OF EDUCATION
Te Tāhuhu o te Mātauranga

New Zealand Government

Foreword

The PISA survey measures the abilities of 15-year-olds in mathematics, science and reading. The survey is undertaken every three years by the OECD. In 2012, 65 countries participated

In 2012 results for New Zealand showed a decline in mathematics, reading and science ability since 2009. The proportion of students at the lowest levels of achievement has increased. New Zealand's results are still above the OECD average in mathematics, reading and science.

The 15 year-olds assessed in this survey started school in 2002. Since that time there have been a number of initiatives put in place to address inequity of achievement among students and to lift the quality of learning and teaching overall.

There have been some successes and there are pockets of excellence in achievement, including in schools in disadvantaged areas. But these successes do not spread easily to other schools. The New Zealand system does not easily support the spread of good practices between schools, and direct interventions in schools that struggle with student achievement have not always been as effective as expected.

Considered together, the information in the Learning Environment series reinforces how important it is for students to get support from their parents, whānau, peers, and those working in their school and the community if they are to reach their potential. The New Zealand PISA data – as well as the data from other countries – clearly establishes a relationship between some of the factors operating in the home and community, in the classroom and school, and student achievement in maths. The data show that support for a student's learning needs to be available in all the contexts in which they acquire their skills and knowledge.

It is unlikely that a student's learning will be better supported or hindered by changing one thing alone – particularly for those students who do not reach the levels of proficiency in the PISA assessment that are associated with supporting a student to participate fully in modern society. But ensuring that students are supported to attend school and classes; are in classrooms where the environment is conducive to learning; are able to enjoy positive relationships with their teachers; are supported by quality teaching – including opportunities to become familiar with all aspects of the curriculum – can make a real difference to what they achieve.

An overview of PISA

The Programme for International Student Assessment (PISA) is an international study that assesses and compares how well countries are preparing their 15-year-old students to meet real-life opportunities and challenges after completing around 10 years of compulsory schooling.

PISA is an initiative of the Organisation for Economic Co-operation and Development (OECD) and a collaborative effort of participating countries. In New Zealand, the Ministry of Education is responsible for implementing and analysing PISA results.

PISA provides countries with information on student achievement and how this relates to student and family factors, school-level factors affecting teaching and learning, and system-related factors.

PISA uses a broad approach to "determine the extent to which young people have acquired the wider knowledge and skills in reading, mathematics and science that they will need in adult life".[1] It is not restricted to assessing how well students have mastered the content of a national school curriculum.

PISA has been administered every three years since it began in 2000. Each time PISA is administered, three key areas of knowledge and skills are assessed: reading literacy, mathematical literacy and scientific literacy. Rotating the main focus for each cycle of PISA provides detailed information on one main literacy area, along with an ongoing source of data on two minor areas.

The focus of PISA 2012 was mathematical literacy, as it was in 2003.

In each country, students complete a two-hour test booklet in their language of instruction.[2] Background information was gathered from students and school principal questionnaires.

Approximately half a million 15-year-old students from 65 countries[3] participated in PISA 2012, including the 34 OECD member countries. In New Zealand, over 5,000 students from 177 schools took part.[4] The majority of these students started school in 2001, the rest in 2002.

Schools and students are randomly selected to ensure the sample is representative of the New Zealand 15-year-old population. Schools that are selected by the PISA consortium are organised by the following characteristics: size, decile, location (urban or rural), authority (state or independent) and type (co-educational or single-sex). Students are selected randomly in the sampled schools from students within the specified age group (between 15 years 3 months and 16 years 2 months).

Further details on PISA study design and quality assurance procedures will be provided in the OECD's forthcoming *PISA 2012 Technical Report*.

1 OECD (2013), *PISA 2012 Assessment and Analytical Framework: Mathematics, Reading, Science, Problem Solving and Financial Literacy,* OECD Publishing – p 14.

2 In New Zealand, PISA was administered only in English.

3 PISA participants include countries and economies, such as Shanghai-China. For brevity the word 'countries' in this report will refer to both countries and economies.

4 This includes nearly 1,000 students who took part in the additional financial literacy component.

Contents

Introduction

The Series on the Learning Environment presents findings from PISA 2012 on the student experience of learning maths in New Zealand classrooms compared with classrooms overseas.[5] The three volumes in this series focus on how opportunities for New Zealand students to learn maths, school resources, the delivery of maths in classrooms and student behaviour are linked to maths achievement.

The analysis draws on information collected from students that reflects their cumulative schooling experience in terms of maths achievement, including their current school experience.

In this last volume, *Student Behaviour* (Volume III), behaviour exhibited by 15-year-olds that hinders learning is put under scrutiny. Students' reports of the disciplinary climate in maths lessons are presented, together with principals' reports of student factors that hinder learning at school and how they relate to maths achievement. Finally, student self-reported measures of arriving late for school and skipping class or a day of school are examined.

New Zealand's standing is presented relative to the OECD and a core group of selected comparison countries. The four comparison countries have been selected for two main reasons: English is a language of instruction in these countries, and they represent a range in average maths achievement. For example, Singapore is a particularly high-performing country. Table I lists these countries, together with their mean maths score and distribution.

Table 1: Average maths achievement score and standard deviation for New Zealand and selected countries

	Mean maths score		Standard deviation	
New Zealand	500	(2.2)	100	(1.2)
OECD	**494**	(0.5)	**92**	(0.3)
Australia	504	(1.6)	**96**	(1.2)
United Kingdom	494	(3.3)	**95**	(1.7)
Canada	**518**	(1.8)	**89**	(0.8)
Singapore	**573**	(1.3)	**105**	(0.9)

Note: Average scores and standard deviations of countries significantly different from New Zealand are in bold.
Standard errors are presented in parentheses.

Source: OECD. (2013). *PISA 2012 Results: What Students Know and Can Do – Student Performance in Mathematics, Reading and Science (Volume I)*, PISA, OECD Publishing.

5 The 15-year-old students from around the world who took part in PISA 2012 are enrolled in different grades and will be exposed to different content and classroom environments.

New Zealand's average maths achievement (500 points) was higher than the OECD average (494 points). The spread of scores in New Zealand – as shown by the size of the standard deviation – was relatively wide compared with the OECD average. New Zealand's spread of scores was also relatively wide compared with the comparison countries, apart from Singapore, which had a wide spread of scores, particularly for a high-performing country.

Appendix 1 presents a summary of maths achievement and highlights some of the differences in New Zealand compared with those in the OECD.

Appendix 2 presents the data for the figures in the body of this report.

Appendix 3 looks at the relationship between variables presented in this report and achievement.

Appendix 4 contains the definitions of technical terms and concepts analysed in this report.

When interpreting data presented in this report, it is important to note the following points:

- → 'Maths achievement' refers to the PISA measure of mathematical literacy[6] (see Appendix 4 for a more detailed definition).
- → Information is presented from student and principal questionnaires only. Data relating to teachers, such as teaching practices were provided by students and principals.
- → Any relationship between factors described in this report should not be interpreted as causal.
- → A difference of 35 points in the New Zealand results is regarded by the OCED as equivalent to the difference of one year of formal schooling.

6 The *PISA 2012 Assessment and Analytical Framework* provides a full description of what mathematical literacy is and how it is measured [OECD (2013), *PISA 2012 Assessment and Analytical Framework: Mathematics, Reading, Science, Problem Solving and Financial Literacy*, OECD Publishing].

Key findings

Student behaviour

Disruptive behaviour in class and at school

→ According to New Zealand students' reports of the disciplinary climate, noise and disorder and students not listening to the teacher were the most common behaviours that disrupted learning in maths classes. For over 40 percent of students these behaviours occurred in most or every maths lesson.

→ New Zealand students reported poorer disciplinary climate in maths lessons than students in the OECD, Canada, the United Kingdom and, particularly, Singapore.

→ There was a high level of agreement between New Zealand principals' and students' reports of disruptive behaviour.

→ Higher incidence of behaviour that hinders learning was linked to lower maths achievement.

→ New Zealand stood out among PISA participants for having one of the strongest links between the disciplinary climate in maths lessons and maths achievement.

→ New Zealand principals reported that behaviour that hinders learning occurred less frequently in 2012 than in 2003.

Arriving late, skipping class and skipping days of school

→ Students in New Zealand were likely to be late for class more often than their peers in Australia, Singapore and the United Kingdom.

→ When students were more frequently late, maths achievement was lower.

→ In the two weeks before they took the PISA assessment, 12 percent of New Zealand students skipped class and 13 percent skipped a day of school on one or two occasions. Just over 3 percent of New Zealand students skipped class and 4 percent skipped a day of school more than three times.

→ Of all the factors that are linked to lower maths achievement among New Zealand students, arriving late and skipping school exhibit the strongest association.

→ New Zealand stood out among PISA participants for having one of the strongest links between skipping school and maths achievement, and for having one of the largest differences between low and high socio-economic students in terms of arriving late and skipping school.

→ Between 2003 and 2012 there was a slight decrease in the numbers of students arriving late.

Student behaviour

Volume III of the Series on the Learning Environment examines the incidence of behaviours that can disrupt learning through students' reports of the disciplinary climate in maths lessons, principals' reports of student factors[7] that hinder learning at school, and how they are linked to maths achievement. Results are also presented for how often students arrive late to school and skip class or a day of school, and their link to maths achievement.

Disruptive behaviour in class and at school

This section covers students' reports of the disciplinary climate in maths lessons and principals' reports of student factors that hinder learning at school.

How is the disciplinary climate during maths lessons?

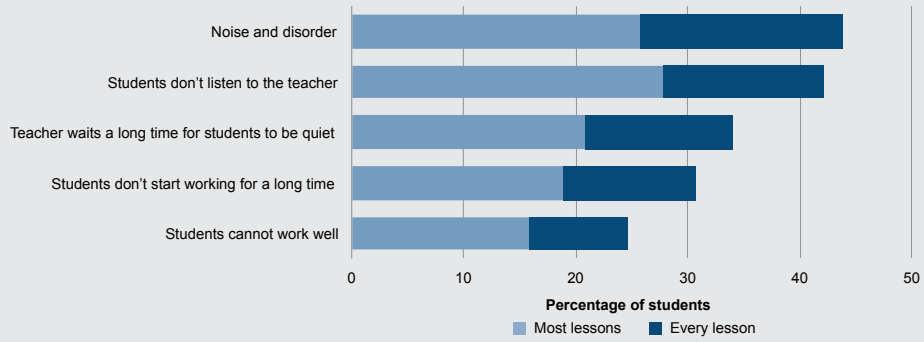
Students were asked to indicate how often various interruptions occur to their learning. Students responded to five items describing different aspects of the disciplinary climate in maths lessons, and reported the frequency in which these aspects occurred, from 'never', 'in some', 'in most' to 'in every' maths lesson.

Figure 1 presents students' average reports of the disciplinary climate in maths lessons in New Zealand.

A high percentage of New Zealand students reported a high frequency of disruptive behaviour. Forty-four percent of New Zealand students reported noise and disorder in most or every maths lesson. Forty-three percent reported that students do not listen to the teacher and one-third reported that the teacher needs to wait a long time for students to be quiet in most or all maths lessons.

7 See Appendix 4 for more information.

Figure 1: New Zealand students' reports of the disciplinary climate in maths lessons

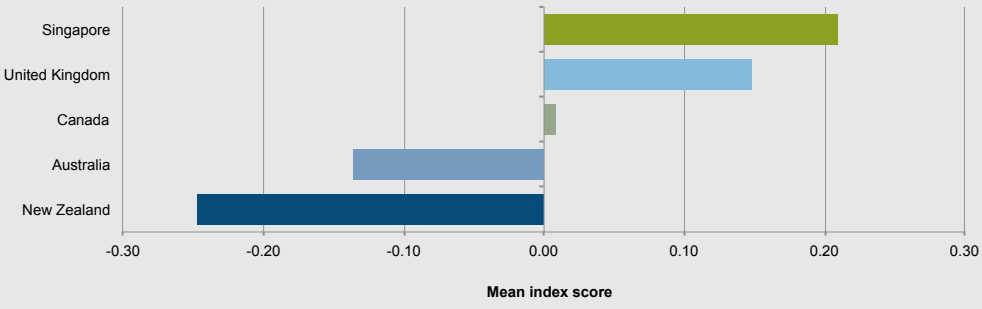


An index of disciplinary climate was created using students' responses to the five items, standardised across OECD countries to have an average of 0 and a standard deviation of 1. Positive values indicate that students reported a better disciplinary climate in their maths lessons than the OECD average and negative values indicate a more disruptive environment.

Figure 2 presents the disciplinary climate index scores for New Zealand and selected comparison countries. New Zealand students reported more disruptive behaviour in their maths lessons than students in Australia, Canada, the United Kingdom and Singapore.

Most of the variation in reported disciplinary climate in maths lessons occurred within New Zealand schools.

Figure 2: Students' average reports of the disciplinary climate in maths lessons



Note: The index of disciplinary climate is based on students' reports of the prevalence of classroom behaviour that hinders learning and is standardised across OECD countries with an average of 0 and a standard deviation of 1. Responses were reverse-scored so that positive values indicate a better disciplinary climate than the OECD and negative values indicate a poorer disciplinary climate.

What factors explain the difference in disciplinary climate?

In New Zealand, disciplinary climate is more strongly linked to the school's average socio-economic background (r = 0.43) than to the economic, social and cultural status of individual students (r = 0.22).

Another way to look at the strong link between socio-economic status and disciplinary climate is to look at the differences in the index for students in socio-economically advantaged and disadvantaged schools. New Zealand students in disadvantaged schools were 0.42 points lower on the index of disciplinary climate in maths lessons than students in advantaged schools.

Has disciplinary climate in maths lessons changed since 2003?

There was no significant change in disciplinary climate reported by students between 2003 and 2012.

Is disciplinary climate in maths lessons linked to maths achievement?

Figure 3 shows how maths achievement changes, by quarters of the index of disciplinary climate, where higher values indicate a more positive learning environment.

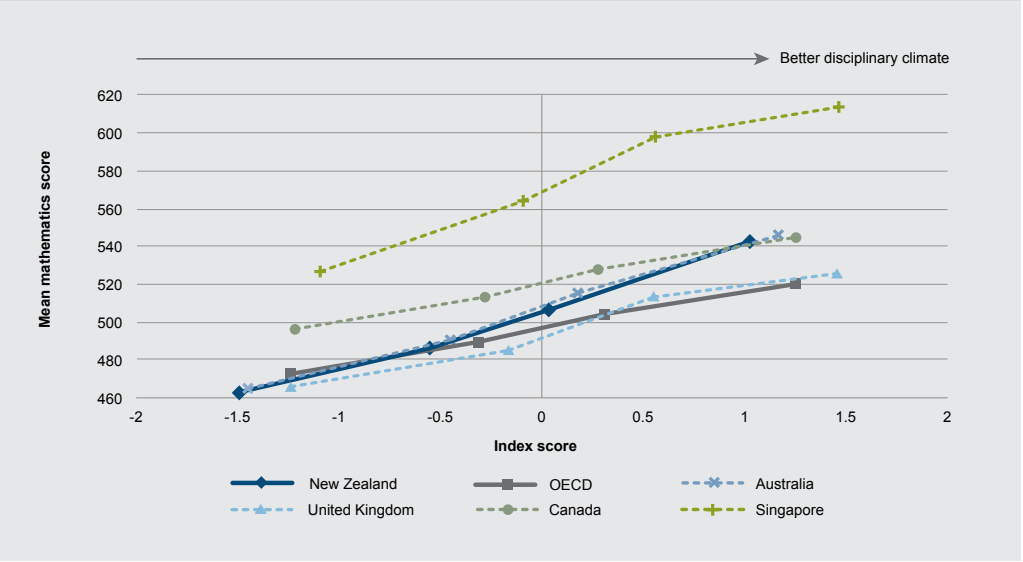
More frequent disruptive behaviour in maths lessons (represented by lower index values) is linked to lower maths achievement. Differences between the top and bottom quarter index values are evident for New Zealand, the OECD average and all comparison countries.

The difference in maths achievement between students in New Zealand at the top quarter (better disciplinary climate) and bottom quarter of the index of disciplinary climate (worse disciplinary climate) is 80 points. An increase of one unit in the index of disciplinary climate is related to a 30-point increase in maths achievement among New Zealand students.

Of participating countries, some of the strongest links between disciplinary climate and maths achievement were found in New Zealand, Australia and Singapore.

Students' reports of the disciplinary climate in maths lessons were strongly associated with maths achievement in New Zealand, more so than in the OECD overall (see Appendix 3).

Figure 3: The link between disciplinary climate in maths lessons and maths achievement



Note: The index of disciplinary climate is based on student reports of disruptive behaviour and is standardised across OECD countries with an average of 0 and a standard deviation of 1. Maths achievement of students is plotted against national quarters of this index.

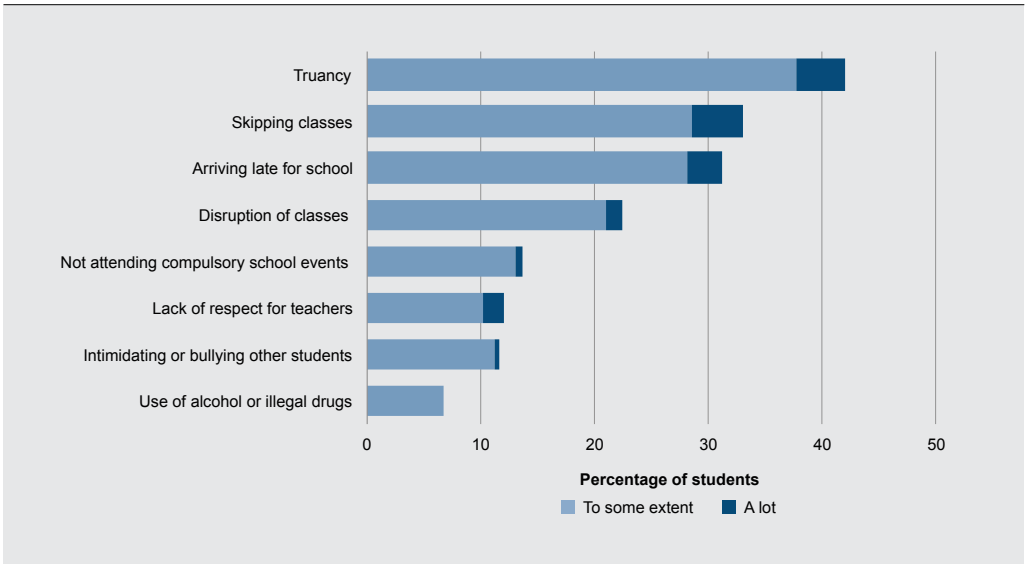
What kinds of student behaviour that hinder learning in school were reported by principals?

Principals were asked to describe to what extent certain aspects of student behaviour hinder learning, from 'not at all', 'very little', 'to some extent' to 'a lot'. Figure 4 presents principals' reports on eight items relating to disciplinary climate in maths lessons in New Zealand.

A high percentage of students in New Zealand attend schools where principals reported that truancy hinders learning (42%), followed by skipping classes and arriving late (around 32%).

In contrast, few students (7%) attend schools where principals reported that use of alcohol or illegal drugs hinders learning to some extent. Eleven percent of students attend schools where principals' report intimidating or bullying other students hinders learning.

Figure 4: Principals' reports of student behaviour that hinders learning in New Zealand schools



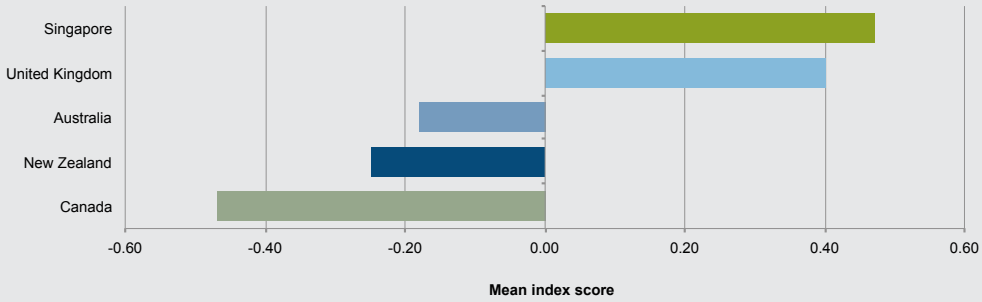
An index of student-related factors was created using principals' responses to the eight items, standardised across OECD countries to have an average of 0 and a standard deviation of 1. Responses were reverse-scored so that positive values indicate that student behaviour hinders learning to a lesser extent than the OECD, and negative values indicate that student behaviour hinders learning to a greater extent.

Figure 5 presents average index scores for student-related factors affecting school climate in New Zealand and four comparison countries.

Principals in New Zealand reported a similar incidence of disruptive student behaviour to Australian principals. Reports of student behaviour that hinder learning in New Zealand schools were lower than in Canada, but higher than in Singapore and the United Kingdom.

In New Zealand, student-related factors that hinder learning are more strongly linked to the school's average socio-economic background (r = 0.53) than to the economic, social and culture status of individual students (r = 0.22).

Figure 5: Principals' average reports of student behaviour that hinders learning in schools



Note: The index of student-related factors affecting school climate is based on principals' reports of the prevalence of disruptive behaviour and is standardised across OECD countries with an average of 0 and a standard deviation of 1. Responses were reverse-scored so that positive values indicate less frequent behaviour that hinders learning than the OECD, and negative values indicate more frequent behaviour that hinders learning.

Has the incidence of disruptive student behaviour changed since 2003?

Over time, New Zealand principals' reports of disruptive student behaviour have decreased, with an average of –0.65 index points in 2003, which had improved by 0.40 index points in 2012 (–0.25 index points).

Is disruptive student behaviour linked to maths achievement?

Figure 6 shows how maths achievement changes, by quarters of the index of student-related factors that hinder learning, where positive values indicate less disruptive student behaviour than the OECD average.

Reports of more disruptive student behaviour (represented by lower index values) are linked to lower maths achievement in New Zealand, the four comparison countries and the OECD.

Differences were evident in each country and the OECD between the top and bottom quarters of the index of student-related factors, with a difference in maths achievement of 62 points in New Zealand. An increase of one unit in the index of student-related factors is related to a 29-point increase in maths achievement in New Zealand.

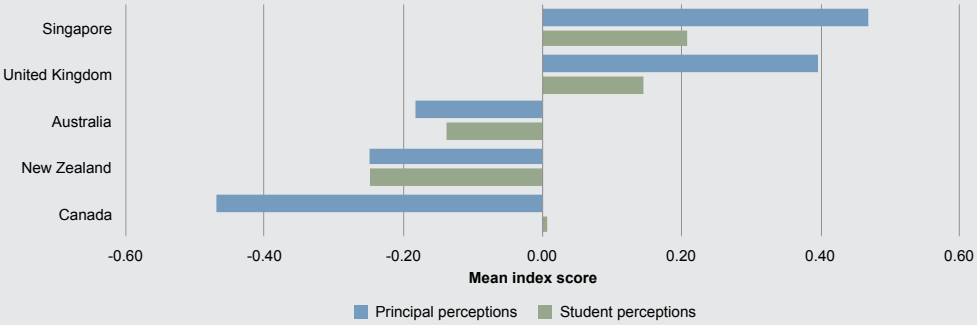
Figure 6: The link between disruptive student behaviour in school and maths achievement

Note: The index of student-related factors that hinder learning is based on principals' reports of disruptive student behaviour and is standardised across OECD countries with an average of 0 and a standard deviation of 1. Maths achievement of students is plotted against national quarters of this index.

Do students' and principals' reports of disruptive behaviour match up?

Figure 7 illustrates that the average levels of New Zealand principals' reports of student behaviour that hinders learning matches the average level of New Zealand students' reports of disruptive behaviour. That is, their relative positions, compared to the OCED averages, are the same. This is not the case for Canada, the United Kingdom and Singapore.

Figure 7: Students' and principals' average reports of disruptive behaviour



Note: The index of disciplinary climate is based on students' reports, while the index of student-related factors affecting school climate is based on principals' reports of the prevalence of disruptive behaviour. Both indices are standardised across OECD countries with an average of 0 and a standard deviation of 1. Responses were reverse-scored so that positive values reflect reports that students' behaviour hinders learning to a lesser extent than the OECD, and negative values indicate that students' behaviour hinders learning to a greater extent.

Arriving late, skipping class and skipping days of school

Arriving late and skipping school are indicators of student behavioural disengagement. They are considered in this report because they have a direct role in determining the learning environment. These factors limit students' exposure to maths content and disrupt the continuity of learning.

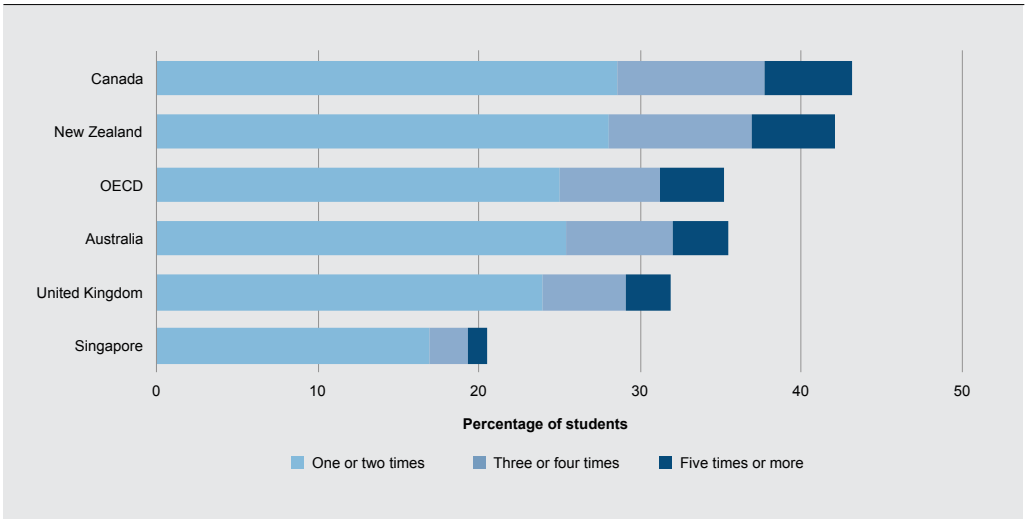
How often do students arrive late for school?

Students were asked to indicate how many times they arrived late for school in the two weeks prior to the PISA assessment, from: 'none', 'one or two times', 'three or four times', to 'five or more times'.

Figure 8 illustrates how often students arrived late.

In New Zealand and Canada more than 14 percent of students indicated that they frequently arrived late to school (three or more times), compared to 10 percent of students in Australia and the OECD, fewer than 8 percent in the United Kingdom and fewer than 4 percent in Singapore.

Figure 8: Percentage of students who reported they arrived late for school



Note: Students reported how often they arrived late in the two weeks prior to PISA.

The concentration of students who reported arriving late at least once in the two weeks prior to PISA can provide a picture of how many New Zealand students attend schools where arriving late is part of the school culture:

→ 30 percent of students attended schools where more than half of the students were late at least once

→ 56 percent of students attended schools where more than one-quarter but less than half were late at least once.

There was no gender difference in New Zealand (41% of boys and 43% of girls were late at least once).

Across participating countries, students with low economic, social and cultural status (ESCS) reported arriving late more often.

In New Zealand, half of low ESCS students arrived late for school in the two weeks prior to the PISA assessment, compared to one-third of high ESCS students. The disparity in the percentage of students arriving late for school between low and high ESCS students in New Zealand was the highest among PISA participants.

Has the incidence of arriving late changed since 2003?

There has been a slight improvement since 2003, with a three percent reduction of students who arrived late five times or more, and a four percent increase of students who did not arrive late once.

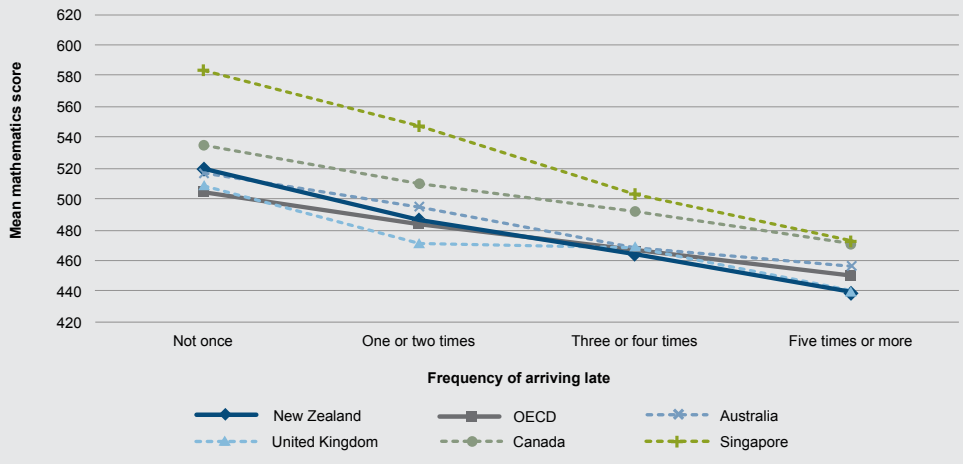
Is arriving late linked to maths achievement?

Figure 9 shows how maths achievement changes according to how often students report they arrive late.

Arriving late more often is associated with lower maths achievement in New Zealand, the OECD and all comparison countries. Across these countries, maths achievement of students who said they were late at least five times in the two weeks prior to the PISA assessment was substantially lower than for students who said they were not once late to school, with a larger difference between New Zealand students (80 points) than in the OECD overall (54 points).

Across the OECD, there was a strong link between students reporting that they were late and reporting that they skipped school (r = 0.7). This means that students who arrive late also tend to skip class or a day of school.

Figure 9: The link between reports of arriving late and maths achievement



Note: Students reported how often they arrived late in the two weeks prior to PISA.

How often do students skip class?

Students were asked to indicate how many times they skipped some classes and skipped a whole school day in the two weeks prior to the PISA assessment, from 'none', 'one or two times', 'three or four times', to 'five or more times'.

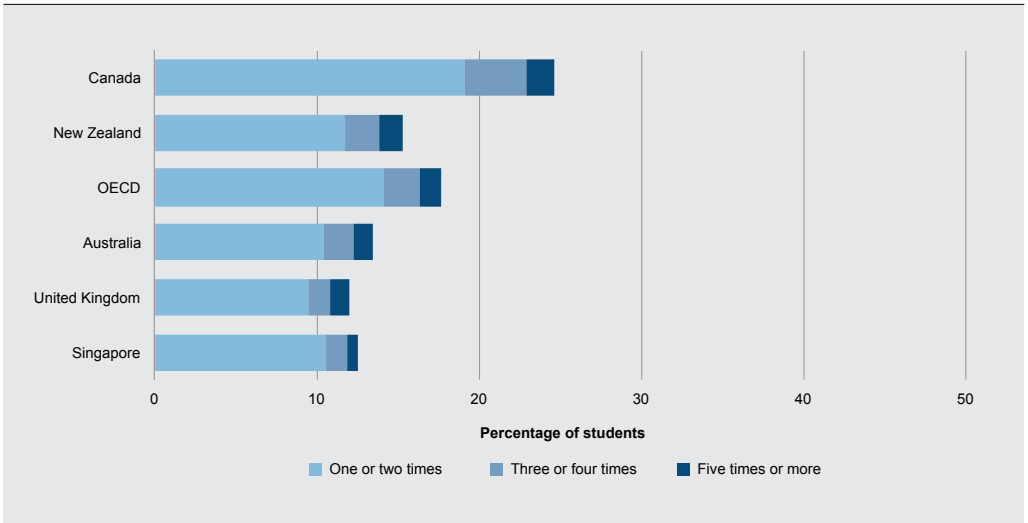
The percentage of students in the OECD, New Zealand and four comparison countries who reported they skipped class is shown in Figure 10. The vast majority of students in New Zealand, the OECD and comparison countries did not once skip class in the two weeks prior to the PISA assessment.

While 12 percent of students in New Zealand reported they skipped class one or two times, 19 percent of students in Canada did so. Over 3 percent of students reported they skipped class more than three times in New Zealand, Australia and the OECD, while over 5 percent did so in Canada. Fewer students reported that they skipped class in the United Kingdom and Singapore.

In New Zealand there was no significant gender difference in terms of reporting skipping classes at least once (14% for boys and 16% for girls).

Across participating countries, students with low economic, social and cultural status (ESCS) reported that they skipped class more often. Some of the largest differences in skipping class between low and high ESCS students were found in New Zealand, where low ESCS students (21%) were twice as likely to report skipping a class in the previous two weeks as high ESCS students (10%).

Figure 10: Percentage of students who reported skipping class



Note: Students reported how often they skipped class in the two weeks prior to PISA.

How often do students skip a day of school?

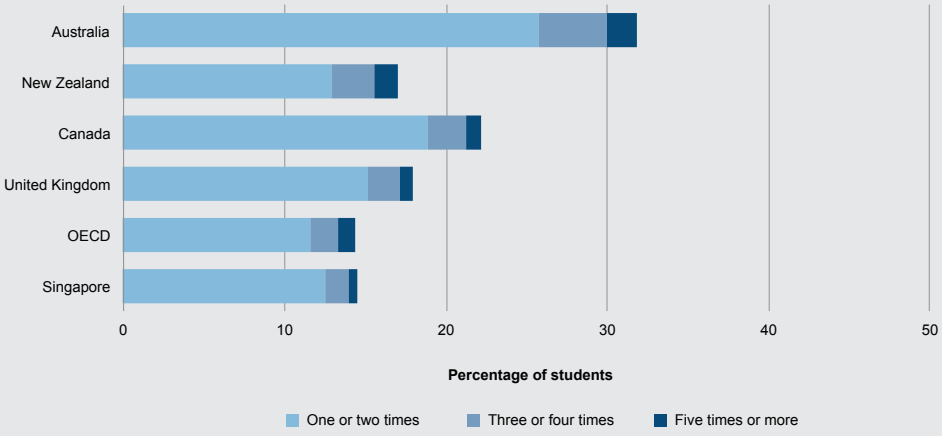
The percentage of students who reported they skipped a day of school is shown in Figure 11. The vast majority of students in New Zealand, the OECD and selected countries reported not once skipping a day of school in the two weeks prior to their PISA assessment.

Approximately 13 percent of students in New Zealand, the OECD and Singapore reported skipping a day of school one or two times, compared to over one-quarter of Australian students. Four percent of students reported skipping a day of school three times or more in New Zealand, the OECD and the United Kingdom, compared to 6 percent in Australia and 2 percent in Singapore.

There were no gender differences in reports of skipping at least one day of school in New Zealand (both 17%) in the two weeks prior to the PISA assessment.

Across participating countries, students with low economic, social and cultural status (ESCS) reported skipping a day of school more often. The largest difference in reporting skipping a day of school between low and high ESCS students was found in New Zealand, where low ESCS students (28%) were more than three times as likely to report skipping a day of school in the two weeks prior to the PISA assessment as high ESCS students (9%).

Figure 11: Percentage of students who reported skipping a day of school



Note: Students reported how often they skipped a day of school in the two weeks prior to PISA.

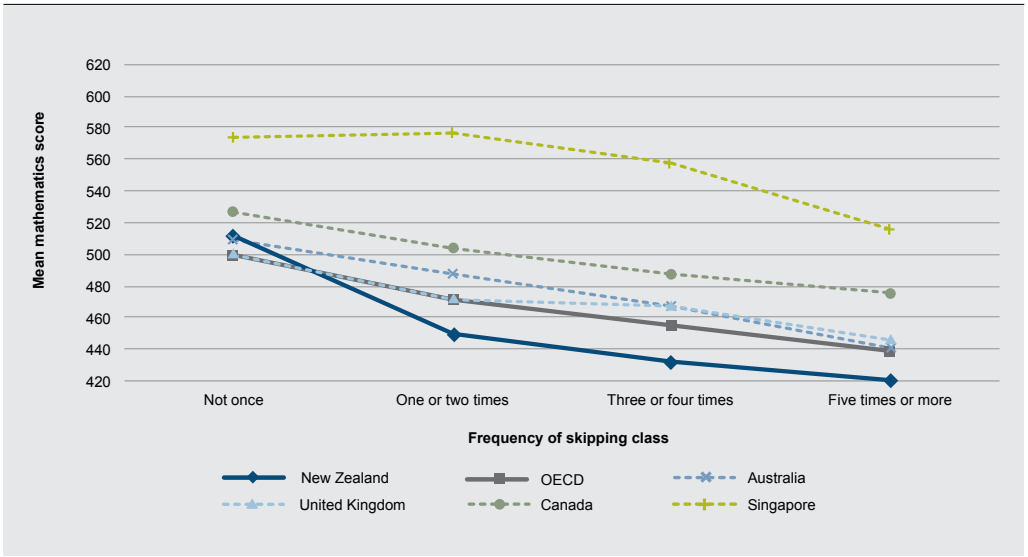
Is there a link between skipping a class or a day of school and maths achievement?

Figures 12 and 13 show how maths achievement changes according to how often students report skipping class or a day of school. Reports of skipping class or a day of school more often were associated with lower maths achievement in New Zealand, the OECD and all comparison countries.

Across these countries, maths achievement of students who reported skipping class five times or more in the two weeks before the PISA assessment was substantially lower than that of students who reported not once skipping class, with a large difference among New Zealand students (91 points) compared to the OECD overall (61 points).

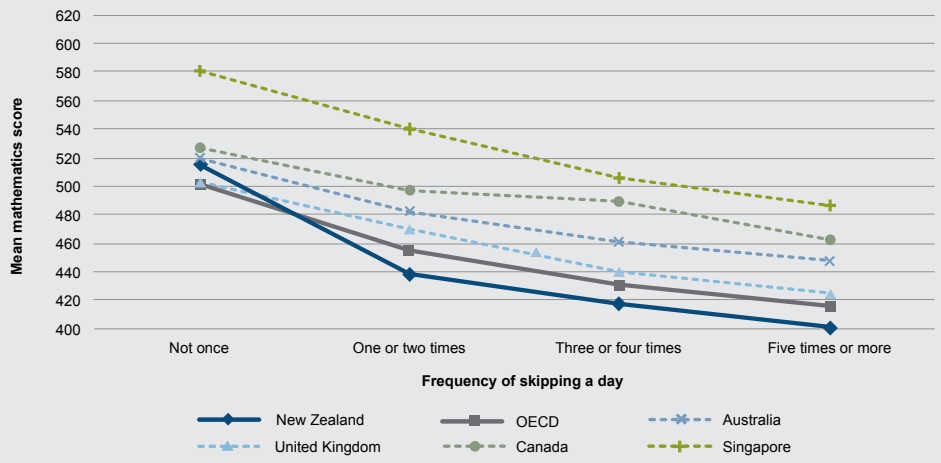
Maths achievement of students who reported skipping a day of school five times or more in the last two weeks was substantially lower than that of students who reported not once skipping a day. The difference among New Zealand students (114 points) was larger than in the OECD overall (85 points).

Figure 12: The link between reports of skipping class and maths achievement



Note: Students reported how often they skipped class in the two weeks prior to PISA.

Figure 13: The link between reports of skipping a day of school and maths achievement



Note: Students reported how often they skipped a day of school in the two weeks prior to PISA.

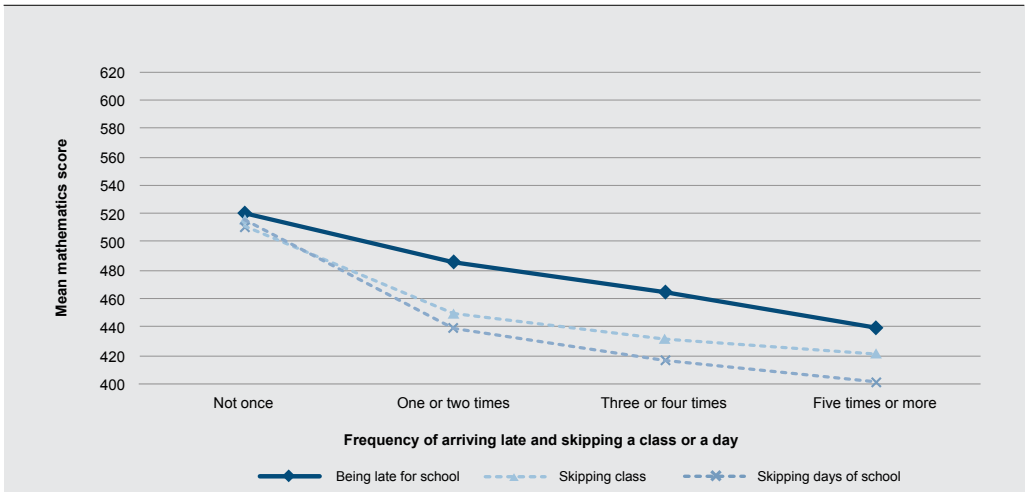
Figure 14 brings together the decreases evident in the achievement of New Zealand students as the incidence of reports of arriving late to school, skipping a class and skipping a day of school increases. In summary:

→ students who reported they were not once late scored on average 80 points more than those who reported they were late five times or more

→ students who reported they did not once skip class scored on average 91 points more than those who reported they skipped class five times or more

→ students who reported they did not once skip a day scored on average 114 points more than those who reported they skipped a day five times or more.

Figure 14: The link between reports of arriving late and skipping school and maths achievement among New Zealand students



Note: Students reported how often they arrived late and skipped class or a day of school in the two weeks prior to PISA.

Summary

What can we say about student behaviour?

Disruptive behaviour in class and at school

Student and principal reports of the incidence of student behaviour that hinders learning were similar in New Zealand and Australia, and higher than in the OECD.

In New Zealand, over 40 percent of students reported that there is noise and disorder in their maths lessons and that students do not listen to what the teacher says. One-third of students are in classrooms where the teacher frequently needs to wait a long time for students to be quiet.

Student economic, social and cultural status (ESCS) and, to a greater extent, average school socio-economic background are linked to students' and principals' reports of disruptive student behaviour.

There has been no change since 2003 in students' reports of disciplinary climate, although principals in New Zealand reported that student behaviour that hinders learning occurs to a lesser extent. This was shown by an improvement of 0.40 index points.

Student and principal reports of more frequent disruptive student behaviour are associated with lower maths achievement.

In New Zealand, Australia and Singapore the link between disciplinary climate and maths achievement is the strongest of all 65 countries participating in PISA.

Students' reports of disciplinary climate in maths lessons and principals' reports of behaviour at school that hinders learning have a strong relationship to maths achievement in New Zealand, more so than in the OECD overall.

Arriving late

In New Zealand and Canada, more than 14 percent of students indicated that they frequently arrived late to school in the two weeks prior to PISA, compared to 10 percent of students in Australia and the OECD.

There has been a slight improvement in New Zealand since 2003, with a reduction in students who report arriving late five times or more and an increase in students who report they did not once arrive late.

Almost one-third of students in New Zealand attend schools where arriving late is relatively common within their school, with more than half of the students reporting they arrived late at least once.

Across participating countries, arriving late was reported as a more frequent behaviour among students with low ESCS. The difference in reporting arriving late by student ESCS was highest in New Zealand (half of low ESCS students arrived late for school compared to one-third of high ESCS students).

Reports of arriving late more often are linked to lower maths achievement in New Zealand, the OECD, and selected comparison countries. New Zealand students who were late at least five times in the last two weeks scored 80 points lower than students who were not once late.

Skipping class and skipping days of school

In the two weeks prior to PISA 2012, the majority of students in New Zealand, the OECD and selected countries reported they did not once skip class or a day of school.

While 12 percent of students in New Zealand reported they skipped class and 13 percent of students reported they skipped a day one or two times, over 3 percent of students reported they skipped class and 4 percent a day of school more than three times.

Across participating countries, students with low ESCS reported skipping school more often. The largest difference between low and high ESCS students in terms of skipping class and a day of school was found in New Zealand.

Twice as many low ESCS students reported they skipped class in the previous two weeks as high ESCS students. Three times as many low ESCS students reported they skipped a day in the previous two weeks as high ESCS students.

New Zealand students who reported they skipped class five times or more in the last two weeks scored on average 91 points lower, and students who reported skipping a day of school five times or more scored on average 114 points lower, than students who reported they did not once skip class or skip a day.

Appendix 1: Maths achievement

Table A1.1: Mean maths achievement

	New Zealand		OECD	
Overall mean	500	(2.2)	494	(0.5)
Gender				
Boys	507	(3.2)	493	(1.3)
Girls	492	(2.9)	481	(1.2)
Student economic, social and cultural status (ESCS)				
Bottom quarter of ESCS index	445	(3.2)	452	(0.7)
Second quarter of ESCS index	493	(4.0)	482	(0.6)
Third quarter of ESCS index	514	(4.0)	506	(0.7)
Top quarter of ESCS index	559	(3.6)	542	(0.8)
School average socio-economic background				
Socio-economically disadvantaged schools	443	(4.9)	444	(0.9)
Socio-economically average schools	497	(4.4)	492	(0.7)
Socio-economically advantaged schools	558	(4.1)	548	(0.9)
School authority				
Public schools	496	(2.5)	489	(0.7)
Private schools	584	(6.1)	522	(1.7)
School location				
Rural schools	458	(6.1)	467	(2.5)
Town schools	492	(5.3)	492	(0.9)
City schools	513	(3.2)	502	(1.2)

Note: Standard errors are presented in parentheses. Results may appear inconsistent due to rounding.

See Appendix 4 for definitions of ESCS, school socio-economic background, school authority and school location.

Table A1.2: Distribution of students

	Percentage	
Gender	**New Zealand**	**OECD**
Boys	51	50
Girls	49	50
School average socio-economic background		
Socio-economically disadvantaged schools	22	26
Socio-economically average schools	55	47
Socio-economically advantaged schools	23	27
School authority		
Public schools	94	81
Private schools	6	19
School location		
Rural schools	6	11
Town schools	38	56
City schools	56	36

The following points summarise some of the differences in maths achievement occurring within New Zealand.

- → New Zealand's maths achievement is significantly higher than the OECD average, but the spread in achievement is wider than the OECD overall.
- → The variation in maths achievement evident within schools in New Zealand is more than the variation occurring between schools. This means that most New Zealand schools have both low- and high-achieving students. A similar pattern is evident in the OECD overall, but to a lesser extent.
- → In New Zealand, as in the OECD overall, the maths achievement of boys is higher than that of girls.
- → Student economic, social and cultural status (ESCS) has an impact on maths achievement, as evidenced by students in the bottom, second, third and top quarters of the PISA ESCS index having progressively higher achievement scores. The same pattern is evident among students attending socio-economically disadvantaged, average and advantaged schools, and public and private schools.
- → The overall variance in student achievement accounted for by differences in student ESCS in New Zealand is 18%, compared to 15% in the OECD on average.
- → Socio-economic background contributes to explaining much of the difference in maths achievement between schools, but it contributes little in explaining the differences in maths achievement among students in the same school.
- → The achievement of students in town schools and city schools is higher than the achievement of students in rural schools in both New Zealand and the OECD overall, although the differences are smaller once socio-economic background is taken into account.

Appendix 2: Tables for figures

Table A2.1: New Zealand students' reports of the disciplinary climate in maths lessons

	Percentage of students							
	Never or hardly ever		Some lessons		Most lessons		Every lesson	
Students cannot work well	29	(0.9)	45	(1.0)	16	(0.7)	9	(0.6)
Students don't start working for a long time	29	(1.1)	38	(0.9)	19	(0.7)	12	(0.7)
The teacher waits a long time for students to be quiet	25	(1.1)	40	(0.9)	21	(0.7)	13	(0.7)
Students don't listen to the teacher	13	(0.8)	43	(1.1)	28	(1.0)	14	(0.8)
Noise and disorder	15	(0.8)	40	(1.0)	26	(0.8)	18	(0.8)

Note: Standard errors are presented in parentheses. Results may appear inconsistent due to rounding.

Source: OECD (2013). *PISA 2012 Results: What Makes Schools Successful? Resources, Policies and Practices (Volume IV)*, PISA, OECD Publishing.

Table A2.2: Students' average reports of the disciplinary climate in maths lessons

	Mean index score	
New Zealand	–0.25	(0.03)
Australia	**–0.14**	(0.02)
Canada	**0.01**	(0.01)
United Kingdom	**0.15**	(0.02)
Singapore	**0.21**	(0.02)

Note: The index of disciplinary climate is based on students' reports of the prevalence of classroom behaviour that hinders learning and is standardised across OECD countries with an average of 0 and a standard deviation of 1. Responses were reverse-scored so that positive values indicate a better disciplinary climate than the OECD, and negative values indicate a poorer disciplinary climate.Values significantly different from New Zealand are indicated in bold. Standard errors are presented in parentheses. Results may appear inconsistent due to rounding.

Source: OECD (2013), *PISA 2012 Results: What Makes Schools Successful? Resources, Policies and Practices (Volume IV)*, PISA, OECD Publishing.

Table A2.3: The link between disciplinary climate in maths lessons and maths achievement

	Mean index scores			
	Bottom quarter	**Second quarter**	**Third quarter**	**Top quarter**
New Zealand	–1.49 (0.04)	–0.56 (0.02)	0.04 (0.04)	1.03 (0.03)
OECD	–1.24 (0.01)	–0.32 (0.00)	0.31 (0.01)	1.25 (0.01)
Australia	–1.45 (0.02)	–0.45 (0.02)	0.18 (0.02)	1.17 (0.02)
United Kingdom	–1.24 (0.03)	–0.17 (0.03)	0.55 (0.02)	1.45 (0.03)
Canada	–1.21 (0.02)	–0.28 (0.01)	0.28 (0.02)	1.25 (0.02)
Singapore	–1.09 (0.03)	–0.09 (0.02)	0.56 (0.02)	1.46 (0.02)
	Mean maths scores			
New Zealand	**463** (3.6)	486 (4.9)	507 (4.7)	**543** (4.8)
OECD	**472** (0.8)	490 (0.8)	504 (0.8)	**520** (0.8)
Australia	**465** (2.6)	491 (2.7)	515 (2.9)	**546** (3.1)
United Kingdom	**466** (4.2)	485 (4.6)	513 (4.7)	**526** (5.1)
Canada	**496** (2.9)	514 (3.5)	528 (3.1)	**545** (2.9)
Singapore	**527** (3.6)	564 (3.7)	598 (3.6)	**614** (3.3)

Note: The index of disciplinary climate is standardised across OECD countries with an average of 0 and a standard deviation of 1, where positive values indicate that students reported less disruptive behaviour than the OECD and negative values indicate that students reported more disruptive behaviour. Maths achievement is presented for national quarters of this index. Top and bottom quarter values significantly different from each other are indicated in bold. Standard errors are presented in parentheses. Results may appear inconsistent due to rounding.

Source: OECD (2013), *PISA 2012 Results: What Makes Schools Successful? Resources, Policies and Practices (Volume IV)*, PISA, OECD Publishing.

Table A2.4: Principals' reports of student behaviour that hinders learning in New Zealand schools

	Percentage of students			
	Not at all	Very little	To some extent	A lot
Use of alcohol or illegal drugs	21 (2.9)	72 (3.5)	7 (2.3)	0 –
Intimidating or bullying other students	11 (2.1)	76 (3.1)	11 (2.3)	< 0.5 (0.3)
Lack of respect for teachers	15 (2.8)	72 (3.5)	10 (2.4)	2 (1.3)
Not attending compulsory school events	26 (4.0)	60 (4.1)	13 (2.8)	1 (0.5)
Disruption of classes	8 (1.8)	67 (3.4)	21 (3.1)	1 (1.2)
Arriving late for school	8 (1.9)	61 (4.2)	28 (3.9)	3 (1.6)
Skipping classes	11 (1.8)	56 (3.7)	28 (3.4)	4 (1.9)
Truancy	9 (2.1)	49 (3.7)	38 (3.4)	4 (1.7)

Note: Standard errors are presented in parentheses. Results may appear inconsistent due to rounding.

Source: OECD (2013), *PISA 2012 Results: What Makes Schools Successful? Resources, Policies and Practices (Volume IV)*, PISA, OECD Publishing.

Table A2.5: Principals' average reports of student behaviour that hinders learning in schools

	Mean index score
Canada	**–0.47** (0.04)
New Zealand	–0.25 (0.06)
Australia	–0.18 (0.04)
United Kingdom	**0.40** (0.06)
Singapore	**0.47** (0.01)

Note: The index of student-related factors affecting school climate is based on principals' reports of the prevalence of disruptive behaviour and is standardised across OECD countries with an average of 0 and a standard deviation of 1. Responses were reverse-scored so that positive values indicate less frequent behaviour that hinders learning than the OECD, and negative values indicate more frequent behaviour that hinders learning. Values significantly different from New Zealand are indicated in bold.

Standard errors are presented in parentheses. Results may appear inconsistent due to rounding.

Source: OECD (2013), *PISA 2012 Results: What Makes Schools Successful? Resources, Policies and Practices (Volume IV)*, PISA, OECD Publishing.

Table A2.6: The link between disruptive student behaviour in school and maths achievement

	Mean index scores			
	Bottom quarter	**Second quarter**	**Third quarter**	**Top quarter**
New Zealand	–1.25 (0.10)	–0.47 (0.07)	–0.12 (0.04)	0.85 (0.15)
OECD	–1.17 (0.01)	–0.38 (0.01)	0.14 (0.01)	1.10 (0.02)
Australia	–1.39 (0.04)	–0.51 (0.04)	0.04 (0.04)	1.14 (0.08)
United Kingdom	–0.53 (0.06)	0.00 (0.03)	0.47 (0.08)	1.65 (0.12)
Canada	–1.42 (0.05)	–0.78 (0.04)	–0.31 (0.04)	0.64 (0.07)
Singapore	–0.45 (0.01)	0.09 (0.00)	0.38 (0.01)	1.87 (0.02)
	Mean maths scores			
New Zealand	**459** (5.7)	495 (9.6)	531 (5.9)	**521** (6.3)
OECD	**467** (1.2)	490 (1.2)	504 (1.2)	**517** (1.3)
Australia	**468** (2.9)	493 (4.5)	517 (3.7)	**540** (3.7)
United Kingdom	**477** (6.3)	484 (9.0)	498 (7.4)	**521** (9.0)
Canada	**497** (3.6)	509 (4.2)	523 (4.1)	**543** (3.8)
Singapore	**544** (2.6)	567 (3.1)	555 (3.1)	**633** (2.4)

Note: The index of student-related factors that hinder learning is standardised across OECD countries with an average of 0 and a standard deviation of 1. Responses were reverse-scored so that positive values indicate less disruptive behaviour than the OECD, and negative values indicate a greater prevalence of disruptive behaviour. Maths achievement of students is presented for national quarters of this index. Top and bottom quarter values significantly different from each other are indicated in bold.

Standard errors are presented in parentheses. Results may appear inconsistent due to rounding.

Source: OECD (2013), *PISA 2012 Results: What Makes Schools Successful? Resources, Policies and Practices (Volume IV)*, PISA, OECD Publishing.

Table A2.7: Students' and principals' average reports of disruptive behaviour

	Students' mean index score (disciplinary climate)	**Principals' mean index score (student-related factors affecting school climate)**
Canada	**0.01** (0.01)	**–0.47** (0.04)
New Zealand	–0.25 (0.03)	–0.25 (0.06)
Australia	**–0.14** (0.02)	–0.18 (0.04)
United Kingdom	**0.15** (0.02)	**0.40** (0.06)
Singapore	**0.21** (0.02)	**0.47** (0.01)

Note: The index of disciplinary climate is based on students' reports of the prevalence of classroom behaviour that is expected to hinder learning and is standardised across OECD countries with an average of 0 and a standard deviation of 1. Responses were reverse-scored so that positive values indicate a better disciplinary climate than the OECD, and negative values indicate a poorer disciplinary climate. The index of student-related factors affecting school climate is based on principals' reports of the prevalence of disruptive behaviour and is standardised across OECD countries with an average of 0 and a standard deviation of 1. Responses were reverse-scored so that positive values indicate less frequent behaviour that hinders learning than the OECD, and negative values indicate more frequent behaviour that hinders learning. Values significantly different from New Zealand are indicated in bold. Standard errors are presented in parentheses. Results may appear inconsistent due to rounding.

Source: OECD (2013), *PISA 2012 Results: What Makes Schools Successful? Resources, Policies and Practices (Volume IV)*, PISA, OECD Publishing.

Table A2.8: Percentage of students who reported they arrived late for school

	Percentage of students			
	Not once	One or two times	Three or four times	Five times or more
Singapore	79 (0.5)	17 (0.5)	2 (0.2)	1 (0.2)
United Kingdom	68 (0.8)	24 (0.6)	5 (0.3)	3 (0.2)
Australia	65 (0.6)	25 (0.5)	7 (0.3)	5 (0.2)
OECD	65 (0.2)	25 (0.1)	6 (0.1)	4 (0.1)
New Zealand	58 (1.3)	28 (0.8)	9 (0.6)	5 (0.3)
Canada	57 (0.7)	29 (0.5)	9 (0.4)	5 (0.3)

Note: Students reported how often they arrived late and skipped class or a day of school in the two weeks prior to PISA.
Standard errors are presented in parentheses. Results may appear inconsistent due to rounding.

Source: OECD (2013), *PISA 2012 Results: Ready to Learn – Students' Engagement, Drive and Self-Beliefs (Volume III)*, PISA, OECD Publishing.

Table A2.9: The link between reports of arriving late and maths achievement

	Mean maths score			
	Not once	One or two times	Three or four times	Five times or more
Singapore	**583** (1.5)	547 (3.5)	504 (8.5)	**473** (15.5)
United Kingdom	**509** (3.1)	471 (4.0)	469 (5.9)	**440** (9.9)
Australia	**517** (1.7)	495 (2.4)	469 (4.3)	**456** (5.5)
OECD	**504** (0.5)	484 (0.7)	467 (1.3)	**450** (1.7)
New Zealand	**520** (2.6)	486 (3.3)	464 (5.7)	**440** (6.4)
Canada	**534** (1.8)	510 (2.5)	491 (3.4)	**471** (4.5)

Note: Students reported how often they arrived late and skipped class or a day of school in the two weeks prior to PISA.
Maths achievement is presented for students in each country according to how often they arrived late. Maths scores significantly different from each other for students who were not once late vs. late five times or more are indicated in bold. Standard errors are presented in parentheses. Results may appear inconsistent due to rounding.

Source: OECD (2013), *PISA 2012 Results: Ready to Learn – Students' Engagement, Drive and Self-Beliefs (Volume III)*, PISA, OECD Publishing.

Table A2.10: Percentage of students who reported skipping class

	Percentage of students			
	Not once	One or two times	Three or four times	Five times or more
Singapore	88 (0.5)	11 (0.5)	1 (0.1)	1 (0.1)
United Kingdom	88 (0.5)	10 (0.4)	1 (0.2)	1 (0.2)
Australia	87 (0.4)	10 (0.3)	2 (0.1)	1 (0.1)
OECD	82 (0.1)	14 (0.1)	2 (0.0)	1 (0.0)
New Zealand	85 (0.7)	12 (0.6)	2 (0.3)	1 (0.2)
Canada	75 (0.5)	19 (0.4)	4 (0.2)	2 (0.2)

Note: Students reported how often they skipped class in the two weeks prior to PISA. Standard errors are presented in parentheses. Results may appear inconsistent due to rounding.

Source: OECD (2013), *PISA 2012 Results: Ready to Learn – Students' Engagement, Drive and Self-Beliefs (Volume III)*, PISA, OECD Publishing.

Table A2.11: Percentage of students who reported skipping a day of school

	Percentage of students			
	Not once	One or two times	Three or four times	Five times or more
Singapore	86 (0.4)	13 (0.4)	2 (0.2)	1 (0.1)
OECD	86 (0.1)	12 (0.1)	2 (0.0)	1 (0.0)
United Kingdom	82 (0.6)	15 (0.5)	2 (0.2)	1 (0.1)
Canada	78 (0.6)	19 (0.4)	2 (0.2)	1 (0.1)
New Zealand	83 (0.6)	13 (0.5)	3 (0.3)	2 (0.2)
Australia	68 (0.6)	26 (0.5)	4 (0.2)	2 (0.1)

Note: Students reported how often they skipped a day of school in the two weeks prior to PISA. Standard errors are presented in parentheses. Results may appear inconsistent due to rounding.

Source: OECD (2013), *PISA 2012 Results: Ready to Learn – Students' Engagement, Drive and Self-Beliefs (Volume III)*, PISA, OECD Publishing.

Table A2.12: The link between reports of skipping class and maths achievement

	Mean maths score			
	Not once	One or two times	Three or four times	Five times or more
Singapore	**574** (1.4)	577 (4.5)	557 (13.4)	**516** (18.6)
United Kingdom	**499** (3.2)	471 (6.6)	467 (16.9)	**446** (17.4)
Australia	**510** (1.6)	488 (3.6)	467 (7.5)	**441** (7.9)
OECD	**499** (0.5)	472 (1.0)	455 (2.1)	**439** (2.8)
New Zealand	**511** (2.2)	450 (5.8)	432 (11.1)	**420** (13.1)
Canada	**527** (1.9)	503 (2.8)	488 (5.8)	**476** (7.3)

Note: Students reported how often they skipped class in the two weeks prior to PISA. Maths achievement is presented for students in each country according to how often they skipped class. Maths scores significantly different from each other for students who did not once skip class vs. skipped class five times or more are indicated in bold. Standard errors are presented in parentheses. Results may appear inconsistent due to rounding.

Source: OECD (2013), *PISA 2012 Results: Ready to Learn – Students' Engagement, Drive and Self-Beliefs (Volume III)*, PISA, OECD Publishing.

Table A2.13: The link between reports of skipping a day of school and maths achievement

	Mean maths score			
	Not once	One or two times	Three or four times	Five times or more
Singapore	**580** (1.4)	540 (4.6)	506 (11.6)	**486** (21.7)
OECD	**501** (0.5)	454 (1.2)	431 (2.5)	**416** (3.1)
United Kingdom	**502** (3.5)	469 (4.0)	440 (9.4)	**425** (14.6)
Canada	**527** (1.9)	498 (3.0)	489 (7.1)	**462** (8.5)
New Zealand	**515** (2.2)	439 (3.4)	417 (8.3)	**401** (12.3)
Australia	**519** (1.9)	482 (2.1)	461 (4.3)	**448** (7.1)

Note: Students reported how often they skipped a day of school in the two weeks prior to PISA. Maths achievement is presented for students in each country according to how often they skipped a day of school. Maths scores significantly different from each other for students who did not once skip a day of school vs. skipped a day of school five times or more are indicated in bold. Standard errors are presented in parentheses. Results may appear inconsistent due to rounding.

Source: OECD (2013), *PISA 2012 Results: Ready to Learn – Students' Engagement, Drive and Self-Beliefs (Volume III)*, PISA, OECD Publishing.

Table A2.14: The link between reports of arriving late and skipping school and maths achievement among New Zealand students

	Mean maths score			
	Not once	**One or two times**	**Three or four times**	**Five times or more**
Arriving late	**520** (2.6)	486 (3.3)	464 (5.7)	**440** (6.4)
Skipping class	**511** (2.2)	450 (5.8)	432 (11.1)	**420** (13.1)
Skipping a day	**515** (2.2)	439 (3.4)	417 (8.3)	**401** (12.3)

Note: Students reported how often they arrived late and skipped class or a day of school in the two weeks prior to PISA.
Maths achievement is presented for students in each country according to how often they arrived late, skipped class or a day of school.
Maths scores significantly different from each other are indicated in bold. Standard errors are presented in parentheses. Results may appear inconsistent due to rounding.

Source: OECD (2013), *PISA 2012 Results: Ready to Learn – Students' Engagement, Drive and Self-Beliefs (Volume III)*, PISA, OECD Publishing.

Appendix 3: Measuring the association between student behaviour and achievement

Table A3.1 gives measures of the association between learning environment factors that are significantly linked to maths achievement. The first column gives the average difference between groups of students. For students who were late or skipped a class or a day this is given as the difference between "five times or more" and "not once" and for the other factors the average difference between two students one unit apart on the index for a learning environment factor (change in achievement per unit of index)[8] is reported.

The second column is the percentage of variance in New Zealand maths scores explained by each learning environment factor.[9] This can be compared with the percentage of variance explained in the OECD (column 3) to provide an indication of whether the strength of the association in New Zealand is stronger or weaker than for other countries.

The percentage of variance explained is obtained from the results of a linear regression where maths achievement is the dependent variable. Another way of looking at the percentage explained is as a measure of how close data points are to the regression line – a high percentage means that data points are close to the line whereas a low percentage means that there is a large spread of achievement around the regression line. The slope of the regression line is given by the change in achievement per unit of index.

8 As each PISA index is set to an OECD mean of 0 and standard deviation of 1, the magnitude of the change in achievement can be compared between two or more factors.

9 It is important to note that variance explained in this context is a measure of association only and does not imply that maths achievement is caused by the learning environment factor.

Table A3.1: Relationship between variables in Volume III and maths achievement

Relationship between variables in Volume III and maths achievement	Difference between groups of students
Students who were late five times or more achieved less than those who were not once late	Decrease of 80 points
Students who skipped a class five times or more achieved lower scores than those who did not once skip class	Decrease of 91 points for skipping class
Students who skipped a day five times or more achieved lower scores than those who did not once skip a day of school	Decrease of 114 points for skipping a day

Relationship between variables in Volume III and maths achievement[1]	Change in achievement per unit of index	Variance explained in New Zealand (%)	Variance explained in OECD (%)
Less disruptive behaviour (a better disciplinary climate) in maths lessons was related to *higher* maths achievement	Increase of 30 points for student perceptions	9	4
Less disruptive behaviour (a better disciplinary climate) at school was related to *higher* maths achievement	Increase of 29 points for principal perceptions	7	5

[1] Measures of association from a univariate linear regression with maths achievement as the dependent variable.

Appendix 4: Definitions

Technical definitions

Average

Student performances in PISA are reported using means (a type of average) for groupings of students. In general, the mean of a set of scores is the sum of the scores divided by the number of scores, and it is referred to in this report as 'the average'. For PISA, as with other large-scale studies, the means for a country are adjusted slightly (in technical terms, 'weighted') to reflect the total population of 15-year-olds rather than just the sample.

The OECD average includes only the OECD countries: no non-OECD (partner) countries are included. The OECD average is the average of the means for the OECD countries.

Index points

Index points are values that New Zealand and other participating countries have on a particular index, which, unless otherwise stated, have been standardised to have an average of 0 and a standard deviation of 1 among OECD countries.

Points

The design of PISA allows for a large number of questions to be used in maths, but each student answers only a proportion of these questions. PISA employs techniques to enable population estimates of achievement to be produced for each country, even though a sample of students responded to differing selections of questions. These techniques result in scores that are on a scale with an average value of 500. Scores on this scale are referred to in this report as points. About two-thirds of students across OECD countries achieved between 400 and 600 points.

Standard error

Because of the technical nature of PISA, the calculation of statistics such as averages and proportions has some uncertainty due to (i) generalising from the sample to the total 15-year-old school population, and (ii) inferring each student's proficiency from their performance on a subset of items. The standard errors (usually given in brackets) provide a measure of this uncertainty. In general, we can be 95 percent confident that the true population value lies within an interval 1.96 standard errors either side of the given statistic.

Statistical significance

In order to determine whether there is a real difference between two scores, tests of statistical significance are conducted that take into account the error associated with means. In this report, comparisons are tested using the t statistic, with results reported at the 95 percent confidence level.

Variance

Variance is a measure of spread. A small total variance of the average score (calculated as the square of the standard deviation) highlights equity in outcomes, such that most students are achieving at levels close to the average. Large total variance highlights inequity, such that many students achieve at levels far from the average. It is useful to compare the variance in achievement among New Zealand students with the average OECD variance.

Definitions of variables in Volume III

Arriving late

Students' self-reports of arriving late for school, without authorisation, in the two weeks prior to the PISA test range from 'none' (1), 'one or two times', 'three or four times', to 'five or more times' (4).

Disciplinary climate

PISA 2012 asked students to describe the frequency with which the following interruptions occur, from 'never' (1), 'in some', 'in most' to 'in all' (4) maths lessons:

- → students don't listen to what the teacher says
- → there is noise and disorder
- → the teacher has to wait a long time for students to quieten down
- → students cannot work well
- → students don't start working for a long time after the lesson begins.

These responses were combined to create a composite index of disciplinary climate such that the index has an average of 0 and a standard deviation of 1 for OECD countries. Positive values indicate that students report a better disciplinary climate in the classroom than the OECD, and negative values indicate a poorer disciplinary climate.

Economic, social and cultural status (ESCS)

The PISA index of economic, social and cultural status (ESCS) was derived from the following three indices: highest occupational status of parents, highest educational level of parents in years of education, and home possessions (including books). In this report, low ESCS students are those in the bottom quarter of the PISA ESCS index within a country, and high ESCS students are those in the top quarter of the index.

Mathematical literacy

This refers to an individual's capacity to formulate, employ, and interpret maths in a variety of contexts. It includes reasoning mathematically and using mathematical concepts, procedures, facts and tools to describe, explain and predict phenomena. It assists individuals to recognise the role that maths plays in the world and to make the well-founded judgements and decisions needed by constructive, engaged and reflective citizens.

School authority

Schools are classified as either public or private, according to whether a private entity or a public agency has the ultimate power to make decisions concerning its affairs. In New Zealand, public schools are also known as state and state-integrated schools. Private schools are also known as independent schools.

School location

- → Rural schools are those in areas with less than 3,000 inhabitants.
- → Town schools are those in urban areas of 3,000 to 100,000 inhabitants.
- → City schools are those in major urban areas with over 100,000 inhabitants.

Skipping class or a day of school

Regular absenteeism represents a missed learning opportunity, signifies lack of interest and also has negative consequences on students' classmates because it contributes to the creation of a disruptive learning environment. Students were asked to report how many times they skipped classes or days of school without authorisation in the two weeks prior to the PISA assessment, from 'none' (1), 'one or two times', 'three or four times', to 'five or more times' (4).

Socio-economically advantaged, average and disadvantaged schools

- → Socio-economically advantaged schools: the average socio-economic status of 15-year-old students is more advantaged than the average socio-economic status of students in the system as a whole.
- → Socio-economically average schools: the average socio-economic status of 15-year-old students is not statistically different from the average socio-economic status of students in the system as a whole.
- → Socio-economically disadvantaged schools: the average socio-economic status of 15-year-old students is more disadvantaged than the average socio-economic status of students in the system as a whole.

Student-related factors that influence learning

To examine the degree to which student behaviour influences learning, school principals were asked to report from 'not at all' (1), 'very little', 'to some extent' to 'a lot' (4) how often they think that learning in their schools is hindered by such factors as students:

- → skipping a day of school
- → skipping classes
- → arriving late for school
- → not attending compulsory school events or excursions
- → lacking respect for teachers
- → disrupting classes
- → using alcohol or illegal drugs
- → intimidating or bullying other students.

The responses were combined to create an index of student-related factors affecting school climate that has an average of 0 and a standard deviation of 1 in OECD countries. Positive values reflect principals' reports that student behaviour hinders learning to a lesser extent than the OECD, and negative values indicate that behaviour hinders learning to a greater extent.

List of countries and economies participating in **PISA 2012**

- Albania*
- Austria
- Bulgaria*
- Chinese Taipei*
- Croatia*
- Denmark
- France
- Hong Kong-China*
- Indonesia*
- Italy
- Kazakhstan*
- Liechtenstein*
- Macao-China*
- Montenegro*
- Norway
- Portugal
- Russian Federation*
- Singapore*
- Spain
- Thailand*
- United Arab Emirates*
- Uruguay*
- Argentina*
- Belgium
- Canada
- Colombia*
- Cyprus*
- Estonia
- Germany
- Hungary
- Ireland
- Japan
- Korea
- Lithuania*
- Malaysia*
- Netherlands
- Peru*
- Qatar*
- Serbia*
- Slovak Republic
- Sweden
- Tunisia*
- United Kingdom
- Viet Nam*
- Australia
- Brazil*
- Chile
- Costa Rica*
- Czech Republic
- Finland
- Greece
- Iceland
- Israel
- Jordan*
- Latvia*
- Luxembourg
- Mexico
- New Zealand
- Poland
- Romania*
- Shanghai-China*
- Slovenia
- Switzerland
- Turkey
- United States

* non-OECD countries and economies

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