**NSW GOVERNMENT**

DEPARTMENT OF EDUCATION

Supporting school completion: The importance of engagement and effective teaching

When students have strong teacher-student relationships, feel challenged, value school, put effort into their learning, participate in school and display positive behaviour, they are more likely to complete Year 12 than their peers who are disengaged at school. Significantly, students from a low-socioeconomic (SES) background[1] who report high levels of these types of engagement are more likely to complete school than high-SES students who report low levels of engagement.

Using data from the NSW *Tell Them From Me* (TTFM) secondary school student survey, this Learning Curve explores the links between students' engagement and experience of teaching practices in the middle of high school (Year 10) and their likelihood of completing Year 12 two years later.

It is accompanied by the resource: *Supporting school completion: Resources for schools, teachers and parents/carers*, which outlines practical strategies that may help facilitate high school completion and post-school transition. The resource includes four case studies that highlight how some low-SES schools are supporting students to identify post-school pathways and helping them achieve these pathways.

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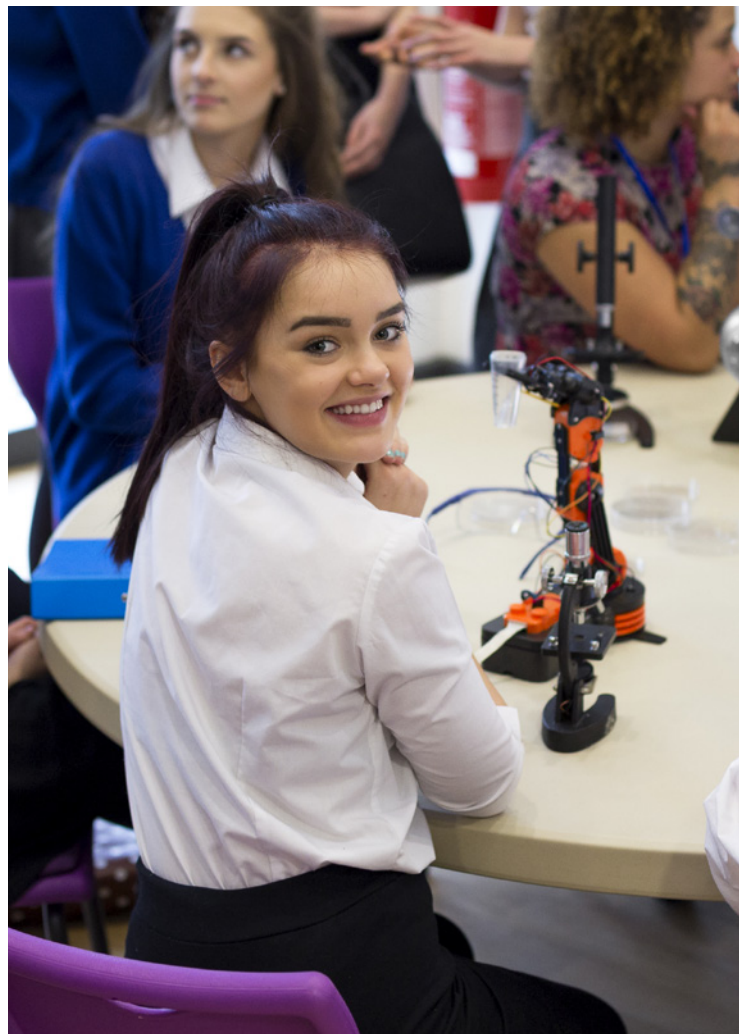
1   Students are classified as low- or high-SES (bottom or top quarter of the state) based on their self-report in TTFM of family structure, parental education and home possessions.

In Australia, socioeconomic status remains a key factor in school completion. By age 19, only 61% of the most disadvantaged students have completed Year 12, compared with 89% of the most advantaged students (Lamb et al. 2015).

Completing Year 12 or an equivalent qualification is a gateway to many successful post-school pathways. It is important that all young people are given the opportunity to complete Year 12, or an equivalent pathway, particularly students who are at risk of not completing school due to their socioeconomic disadvantage. To develop effective classroom and school-wide strategies that will improve completion rates for all students, we need to understand better the factors that impact upon student completion, particularly those that schools can improve and change.

Key findings[2]

Finding 1. Positive engagement and effective teaching increase all students' chances of completing Year 12. When students develop positive relationships with teachers and are supported and challenged by teachers, they are more likely to complete school. Likewise, when students put effort in at school, see value in doing homework and believe school is important and useful for future success, they are also more likely to complete Year 12.

Finding 2. Engaging disadvantaged students increases their chances of completing school. When students from low-SES backgrounds report high levels of engagement and effective teaching practice in the middle of high school they are more likely to complete school than students from high-SES backgrounds who are not engaged in school.

Finding 3. Students from low-SES backgrounds are more likely to be disengaged in key predictors of school completion than students from high-SES backgrounds. In NSW, around half of all high-SES students in Year 10 report positive teacher relationships, positive attendance and value the outcomes of school, whereas only a quarter of low-SES students report a similar level of engagement. At the other extreme, 10% of low-SES Year 10 students have negative engagement in all three measures, compared with 3% of high-SES students.

The socioeconomic gap in school completion rates

In NSW, and across Australia, there is a persistent SES gap in the school completion rates between the bottom and top third of students (Figure 1). This gap is magnified when the top and bottom 10% of students are compared: only 61% of students from the lowest SES backgrounds complete Year 12 or equivalent by age 19 compared to 89% of students from the highest SES backgrounds (Lamb et al. 2015). For low-SES students in NSW, school completion rates remained relatively stable until 2010 when there was a significant rise in school completion rates (Figure 1). This rise coincides with the raising of the compulsory school leaving age in NSW from 15 to 17 years of age.

Figure 1. Percentage of low- and high-SES students that completed Year 12 in NSW by the age of 19
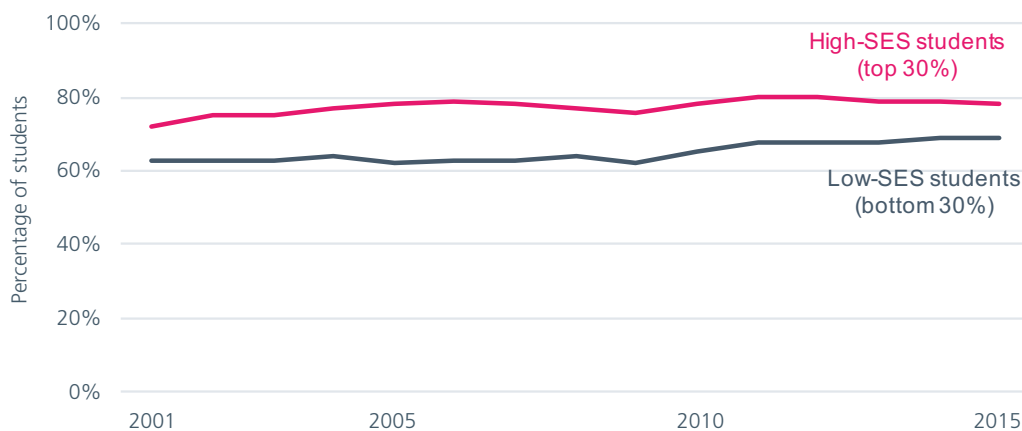

Source: School Education, Report on Government Services 2007, 2010 & 2017. Productivity Commission, Canberra (Table 3A.122, 4A.105, 4A.109).

2 Findings reported in this Learning Curve for students with 'high' versus 'low' engagement refer to students with an engagement score of 7.5 out of 10 (high engagement) compared to students with a score of 2.5 out of 10 (low engagement), after taking into account students' socioeconomic status, prior achievement and plans to complete Year 12.

The cost of leaving school early

Year 12 completion is a key factor in young people's development of skills and knowledge. Students who finish Year 12 are more likely to continue with further study, particularly in higher education, and enter the workforce (ABS 2011). In contrast, early school leavers have difficulty finding and retaining employment and are more likely to be in low-paid jobs compared to those who complete school (Figure 2). The 2016 NSW post-school destination survey found that students who left school early were two-and-a-half times more likely not to be working or studying than students who completed Year 12, and almost three times more likely to be looking for work, six months after school (Social Research Centre 2016). Long-term consequences of not completing school also include increased likelihood of experiencing crime, welfare dependency and poor health (Lamb & Huo 2017).

Figure 2: Average annual earnings of Year 12 completers and early school leavers, 2014 ($)
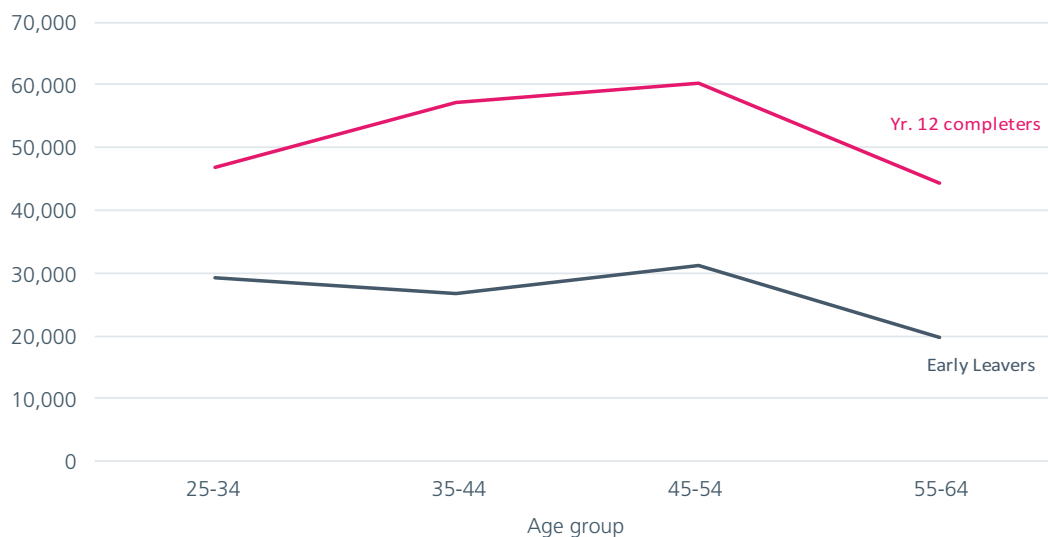
Source: ABS Survey of Income and Housing 2013-2014.

Methodology

Tell Them From Me is an online survey system used to capture the views of students on their schooling. It is aimed at students in Years 4 to 12 and is offered to all NSW government schools. The survey covers indicators of student engagement (social, institutional and intellectual), effective classroom and teaching practices, and school and family factors that are known to influence student learning.

The analysis presented in this Learning Curve tracks 10,800 students who participated in the 2013 secondary survey in Year 10 and links them to their Year 12 outcomes two years later. This analysis examines the relationships between different measures of student engagement and teaching practice and individual, family and school factors that may impact a student's likelihood of completing Year 12.

In this report, school completion is defined as being awarded the HSC (for successful completion of HSC requirements). To examine whether school completion was more likely for certain groups of students, multilevel logistic regression was used.

This technique is used when the outcome variable is dichotomous, i.e. there are only two outcomes: whether a student is awarded the HSC or not. The model denotes the probability or likelihood of a student completing Year 12, and how various characteristics of the student, e.g. students' gender, socioeconomic status and engagement characteristics affect that likelihood. The results from the model highlight how much a difference of one point in each of the TTFM measures affects the odds of students completing Year 12.

Table 1 presents the odds ratios of significant measures of engagement for two separate models. The initial model includes sociodemographic controls and the second also includes students' educational plans (to complete Year 12 and attend university) as additional control variables. Comparing the results of the two models highlights variables that cease to become significant once educational plans are taken into account. This suggests these variables are associated with the likelihood of completing school mainly via the influence they have on students' educational plans.

Odds ratios, which indicate the relative odds of an event, can be converted to the predicted probability of different 'hypothetical' types of students completing secondary school. In this instance, hypothetical students have identical sociodemographic characteristics, with either 'low' or 'high' engagement in each of the TTFM measures highlighted in this Learning Curve. The engagement measures are scored from 0 to 10; the difference between a student with 'low' engagement (score of 2.5) and one with 'high' engagement (score of 7.5) is five score points.

Consider, for example, hypothetical student A who has positive attendance at school, and an otherwise comparable hypothetical student B who has poor attendance. The predicted probability of school completion for student A is 84% while student B has a predicted probability of 78%. This means that the probability of a student with positive attendance completing Year 12 is six percentage points greater than for a student with poor attendance. Note that all other student, school and engagement characteristics are held constant in this example (see Figure 3).

Table 1: Engagement measures positively associated with school completion (odds ratios)

	Engagement measure	Model without educational plans	Model with educational plans controlled for
Teaching practice	Positive teacher-student relationships	1.06**	1.05*
	Challenge in the classroom	1.04**	1.04*
Attitudes to learning	Valuing school outcomes	1.06**	1.02
	Positive effort	1.04**	1.02
	Positive attitudes to homework	1.11**	1.09**
School behaviour and participation	Participation in school clubs^	1.33**	1.29**
	Positive behaviour at school	1.09**	1.06**
	Positive attendance	1.09**	1.08**

*p<0.05, **p<0.01, ^Binary variable
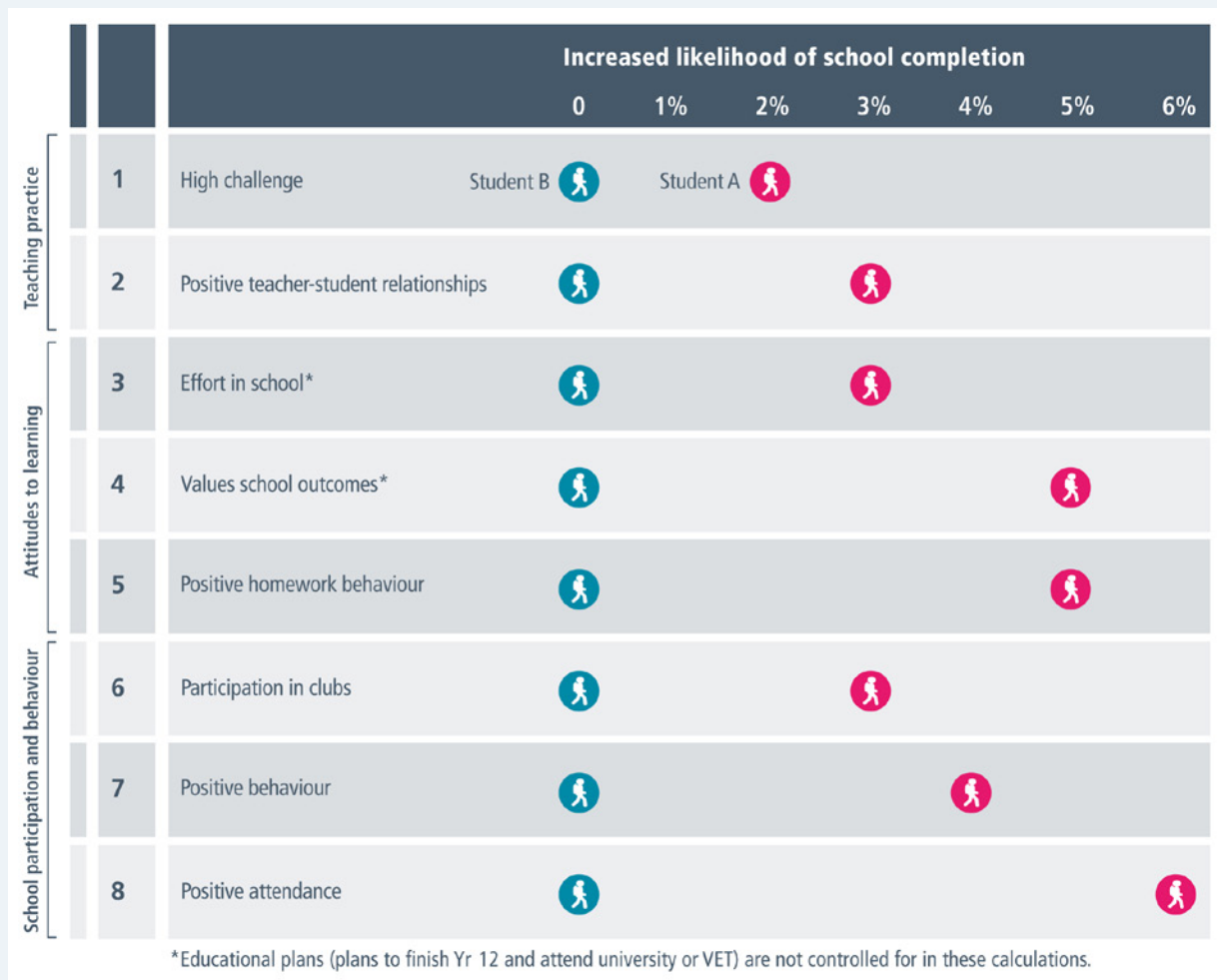
Tell Them From Me Findings[3]

Finding 1: Positive engagement and effective teaching increases all students' chances of completing Year 12.

Figure 3 shows the indicators of engagement and teaching practice captured in Year 10 that are significantly and positively associated with school completion two years later. It reports how much more likely Student A – who reports high levels of engagement in each of the engagement and classroom measures – is to complete Year 12 than Student B who reports disengagement and low levels of classroom practice. The measured differences take into account student socioeconomic status and prior achievement, other engagement indicators and, in most cases, students' plans for school completion and further education.

When students report positive engagement in multiple measures, the likelihood of school completion will increase. For example, a student who reports positive teacher-student relationships, positive homework behaviour and positive attendance is approximately 16 percentage points[4] more likely to complete Year 12 than a student who has low engagement in all three measures.

It should be noted that students' effort in school and their valuing of school outcomes are only significantly associated with school completion when students' educational plans are not included in the model. This result suggests the impact these types of engagement have on school completion is not independent of students' aspirations. Rather, students' effort and valuing school outcomes may have a positive impact on shaping students' aspirations (i.e. plans for school completion), which in turn impact their actual completion (see Methodology for more detail).

Figure 3: Predicted increase in school completion rate of students who report high levels of engagement[5]

			Increased likelihood of school completion						
			0	1%	2%	3%	4%	5%	6%
Teaching practice	1	High challenge	Student B		Student A				
	2	Positive teacher-student relationships	●			●			
Attitudes to learning	3	Effort in school*	●			●			
	4	Values school outcomes*	●					●	
	5	Positive homework behaviour	●					●	
School participation and behaviour	6	Participation in clubs	●			●			
	7	Positive behaviour	●				●		
	8	Positive attendance	●						●

*Educational plans (plans to finish Yr 12 and attend university or VET) are not controlled for in these calculations.

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3   The findings in this Learning Curve are a result of a collaboration between the Centre for Education Statistics and Evaluation (CESE) within the NSW Department of Education, and the Institute for Social Science Research (ISSR) at the University of Queensland.
4   Predicted probabilities calculated for individual measures cannot be added together. Each calculation is based on a specific combination of key engagement variables.
5   The differences are all significant at the 95% level, except for challenge which is significant at the 90% level. However, as per Table 1, all the corresponding odds ratios for each TTFM measure shown are statistically significant at least at the 95% level.

Teaching practice

In NSW, *Tell Them From Me* measures a range of classroom practices that are associated with the quality of instruction in the classroom and the context in which students learn. These include teachers' expectations of students, their relationships with students and whether students find their learning relevant and appropriately challenging.

Students' perceptions of their relationships with teachers is a measure of classroom context, which relates to whether students believe teachers treat students fairly, support students and get along with them. Teacher-student relationships are significantly associated with students' likelihood of completing school. When students who are otherwise comparable in terms of socioeconomic status and prior academic performance report positive teacher-student relationships, they have a predicted school completion rate three percentage points higher than students who report negative teacher-student relationships (Figure 3).

In *Tell Them From Me*, challenge is defined as how difficult, or easy, students perceive subject material in class to be, noting that the experience of challenge is subjective; i.e. a task that is perceived as challenging by one student may not be challenging to another. The NSW *Tell Them From Me* findings highlight that challenge has a small yet significant association with school completion, after accounting for SES and prior academic achievement. Students who report high levels of challenge, i.e. report that their classes deal with difficult or challenging material, are two percentage points more likely to complete Year 12 than students with the same academic characteristics, who report that school work is too easy or boring (Figure 3).

The availability of school staff who can provide support and advocate on behalf of students who are at risk of leaving school early is a crucial factor in the retention of such students in school. The research literature shows that teacher-student relationships have a positive association with both preventing dropout and lowering the risk or intention of students to drop out of high school (Krane et al 2016). Barile et al. (2012) found that students who reported poor quality teacher-student relationships in Year 10 were more likely to have dropped out of school two years later, after controlling for individual, family and school context. Lee and Burkam (2003) reported that having a positive relationship with teachers in Year 10 predicted reduced rates of dropout in Year 12, after adjusting for SES, gender, prior academic achievement and ethnicity. Croninger and Lee (2001) specifically found that informal talks between teachers and students outside the classroom have a strong impact on reducing dropout in academically and socially at-risk students.

Challenge is also widely viewed as being critical for student engagement and achievement (Alexander et al. 1997; Rogers 2007) and many students, particularly high performing ones, are not appropriately challenged at school and express a desire to be more intellectually challenged (CESE 2015). This lack of challenge at school can be a major factor in underachievement, particularly in high achieving students from disadvantaged backgrounds who are less likely to achieve as highly as their advantaged peers (Wai & Worrell 2016). Research has also identified challenge as a possible 'antidote' to student disengagement (Shernoff et al. 2003). According to a national engagement study in the US, 13% of students considered dropping out of high school partly because they believed the work was too easy (Yazzie-Mintz 2010).

Facilitating positive teacher student relationships at Canowindra High School

Canowindra High School, located in central west New South Wales, promotes positive teacher student relationships by offering students the opportunity to be mentored by a teacher of their choice. These mentoring arrangements complement the efforts of the careers advisor to help the school identify students' individual aspirations and provide better tailored support.

For further details about strategies that Canowindra High School uses to encourage high school completion and successful post school transition, refer to the companion publication.

Cultivating positive attitudes to learning at Birrong Girls High School

Birrong Girls High School, located in south west Sydney, makes a concerted effort to raise and support students' aspirations through a number of strategies. Role models who are successful academics or business professionals are invited to mentor and inspire the students. Career lessons and Work Readiness Days help demystify post school pathways so that students can make well informed decisions, guided by the school s transition officer. Finally, a homework centre caters for students who need additional learning support prior to transition. For further details about strategies that Birrong Girls High School uses to encourage high school completion and successful post school transition, refer to the companion publication.

Attitudes to learning

As shown in Figure 3, Year 10 students in NSW who have positive homework behaviour[6] on average have a predicted school completion rate five percentage points higher than students who report negative homework behaviour, after accounting for socioeconomic status and prior academic performance. Like the indicators of effective teaching practice, students' homework behaviour impacts school completion over and above the impact of students' educational plans.

Students' effort in class and the extent to which they value school similarly influence school completion via students' plans for school completion. When educational plans are not accounted for, students who value school (i.e. find school useful and important for future success) are five percentage points more likely to complete Year 12 than students who do not value school. Likewise, students who put in effort in classes (i.e. who try to do well, participate in class discussions and ask for help when needed) are three percentage points more likely to complete Year 12 than students who do not try hard to succeed (Figure 3).

Students' attitudes towards school and their learning are likely to be closely linked to their motivation to succeed in school and ultimately their educational success. Prior studies have shown that valuing school is a critical predictor of students' intentions, choices and persistence in their education (Eccles & Wigfield 2002; Wang 2012), and it is closely linked to positive educational outcomes (Wigfield & Cambria 2010). Similarly, students' effort, persistence and attention in class has been linked with a decreased likelihood of dropping out of school (Fall & Roberts 2012).

School participation and behaviour

An aspect of student engagement that is commonly cited in the research on school completion refers to students' behaviour at school and the extent to which students participate in school. Indicators of positive school behaviour include consistent attendance, positive participation in class, and participation within the school outside class time, e.g. extra-curricular activities.

The NSW findings highlight that Year 10 students[7] who have positive attendance at school have a predicted school completion rate six percentage points higher than students with low school attendance. Similarly, students who display positive, non-disruptive behaviour are four percentage points more likely to complete Year 12 than students who display negative behaviour at school. Participation in extra-curricular activities also improves students' likelihood of completing Year 12. When students report high participation in clubs at school they are three percentage points more likely to complete Year 12 than students who do not participate in extra-curricular clubs at school (Figure 3).

Fostering school participation at Sir Joseph Banks High School

Sir Joseph Banks High School (SJBHS), located in south west Sydney, has a number of measures in place to encourage students' participation in school and learning. Six years ago, a Learning and Transition Centre was created for students to discuss academic and/or non academic matters relating to post school transition with staff. Year 12 students who drop from 12 units to 10 units are required to attend this centre during their 'free periods . In 2018, using RAM funding, the school also created a 'transition advisor role. The transition advisor provides advice relating to post school opportunities and works with each student to create a personalised plan that identifies their individual learning goals and strategies they might employ to help them succeed.

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6 Positive homework behaviour refers to students handing homework in on time and seeing the value in doing homework.
7 The students are taken to have similar socioeconomic status and prior academic performance.

Improving student engagement at Temora High School

Temora High School, located in the Northern Riverina region of New South Wales, stays alert to students who are at risk of becoming disengaged from school and, working in partnership with the local TAFE, provides them with skill development opportunities that aim to make them 'work ready . The school also runs programs like *Failsafe* and *HSC Hub* that provide targeted support for students preparing for the HSC examinations.

Attendance is an easily measurable marker of engagement and poor attendance has been shown to predict gradual disengagement and eventual school withdrawal (Archambault et al. 2009). Other factors that have been shown to result in lower high school graduation rates include student misbehaviour (Rumberger & Lim 2008), disruptive behaviour and truancy (Finn 1989). These types of misbehaviour can lead students to become alienated from school and eventually result in students not completing school.

There is a growing body of research highlighting the beneficial effects of extra-curricular activities on students' educational aspirations and overall academic achievement. For example, Fredricks and Eccles (2006) found that, after controlling for a student's achievement, motivation and demographic characteristics, participation in school clubs predicted higher grades and educational expectations up to two years later. They hypothesised that this may be a result of participants having a greater commitment to school and a greater likelihood of associating with peers who value academic achievement. Participation in extra-curricular activities may also increase students' sense of engagement or attachment to their school, and thereby decrease the likelihood of school failure and dropping out.
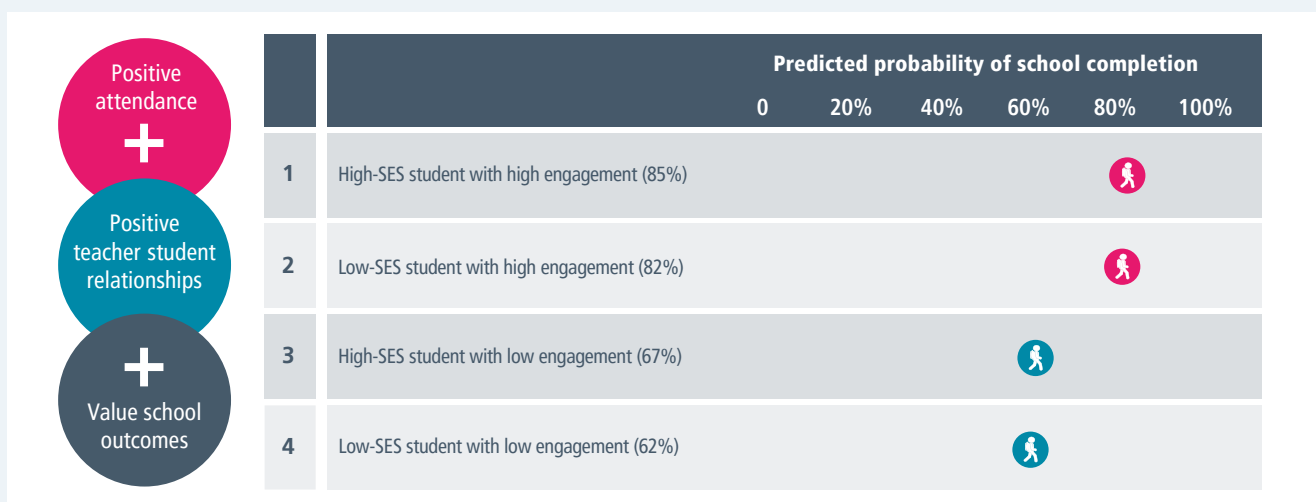
Finding 2: Engaging disadvantaged students will increase their chances of completing school.

A significant finding from this study is the large impact engagement has on the chances of completing school among students from low-socioeconomic backgrounds. Figure 3 highlights the eight indicators of engagement and teaching practice captured in Year 10 that are significantly and positively associated with school completion two years later. Here we focus on three of these measures that have a large impact on school completion and sit across the dimensions of teaching practice, students' attitudes to learning and their participation in school: positive teacher-student relationships, valuing school outcomes and positive attendance.

Figure 4 shows the predicted probabilities of school completion for low- or high-SES students with either 'low' or 'high' engagement in the three selected TTFM measures (teacher-student relationships, attendance and valuing school outcomes).

Highly engaged students from low-SES backgrounds are more likely to complete Year 12 than disengaged students from high-SES backgrounds. A hypothetical student from a low-SES background with positive engagement (who values school outcomes, reports positive teacher-student relationships and positive attendance) is 15 percentage points more likely to complete Year 12 than a disengaged student (i.e. student who does not value school outcomes and reports negative attendance and teacher-student relationships) with a high-SES background (Figure 4). The next section (Finding 3) shows the extent to which low- and high-SES students report being engaged or disengaged across these three indicators.

Figure 4: Predicted rate of school completion of low- and high-SES students who report positive and negative engagement in multiple indicators

Positive attendance + Positive teacher student relationships + Value school outcomes

|		Predicted probability of school completion
		0 — 20% — 40% — 60% — 80% — 100%
1	High-SES student with high engagement (85%)	80%
2	Low-SES student with high engagement (82%)	80%
3	High-SES student with low engagement (67%)	60%
4	Low-SES student with low engagement (62%)	60%

Finding 3: Students from low-SES backgrounds are more likely to be disengaged in key predictors of school completion than students from high-SES backgrounds.

This Learning Curve identifies eight *Tell Them From Me* measures that are significantly and positively associated with school completion (see Figure 3 for more details). Finding 2 highlights three of these measures that have a large impact on school completion and sit across the dimensions of teaching practice, students' attitudes to learning and their participation in school: positive teacher-student relationships, valuing school outcomes and positive attendance.

In NSW, there is a consistent gap in the proportion of low- and high-SES students who report positive engagement in school, as measured by these three indicators. In Year 7, 72% of high-SES and 54% of low-SES students report positive teacher-student relationships, positive attendance at school and that they value school. By Year 10, almost half of all high-SES students have positive engagement in all three measures, whereas only a quarter of low-SES students report the same level of engagement. At the other extreme, 10% of low-SES Year 10 students report negative engagement in all three measures, compared with only 3% of high-SES students (Figure 5).

This gap in student engagement between low- and high-SES students is not unique to NSW. The latest Programme for International Student Assessment (PISA) findings report that in Australia, a significantly lower percentage of 15-year-old students at disadvantaged schools reported that their 'teacher shows an interest in every student's learning', their 'teacher provides extra help' and their 'teacher helps students with their learning' compared with students in advantaged schools. Similarly, 1 in 3 students from low-SES schools reported that they missed a day of school in the last two weeks, compared with 1 in 4 students from high-SES schools (ACER 2017).

Figure 5: Percentage of low- and high-SES students who report high and low engagement (measured by attendance, teacher-student relationships and valuing school outcomes)
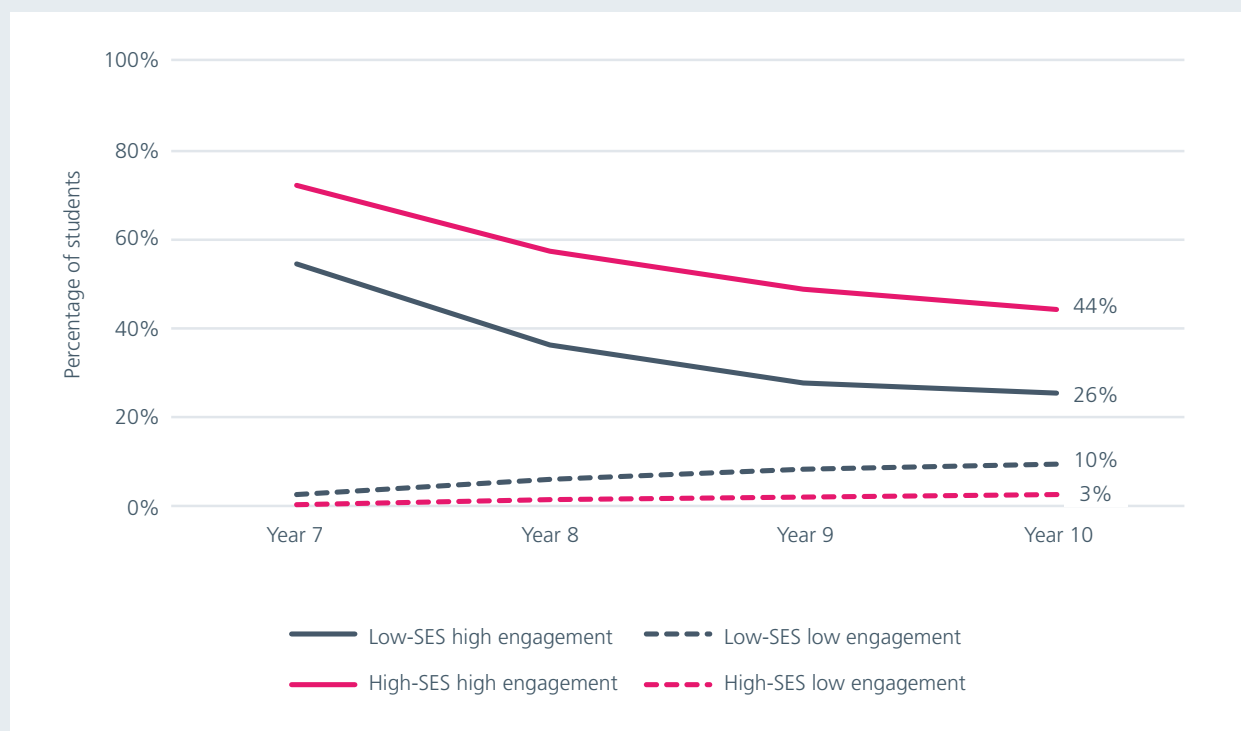
What schools can do to improve completion rates for all students

This study confirms that positive engagement in school increases all students' chances of completing Year 12. Significantly, this study highlights the positive impact engagement has on the completion rates of students from low-SES backgrounds.

Student engagement and school completion can be influenced and strengthened by the things that schools do. A companion piece to this Learning Curve, *Supporting school completion: Resources for schools, teachers and parents/carers*, highlights practical strategies that schools can use, and are using, to improve school completion rates. This accompanying resource also describes the strategies employed by four low-SES high schools in NSW – Sir Joseph Banks High School, Birrong Girls High School, Canowindra High School and Temora High School – all of which are experiencing positive results in student engagement, school completion and post-school transition.

Teaching and school-wide strategies highlighted in this companion piece include:

- promoting positive teacher-student relationships, particularly in the years prior to students finishing high school
- setting high expectations for all students that foster high aspirations and encourage students to work towards these aspirations
- setting students tasks that are intellectually challenging and suited to their particular learning needs
- encouraging students to have high expectations of themselves and stay motivated in their learning
- promoting positive participation in school, and
- supporting students in their decision-making during the post-school transition.

Using these strategies may improve the completion rates of all students, particularly those from low-SES backgrounds and help close the gap between low- and high-SES students' rates of school completion.

References

Alexander, K, Entwisle, D & Horsey C 1997, 'From first grade forward: Early foundations of high school dropout', *Sociology of Education*, vol.70, pp. 87-107.

Archambault, I, Janosz, M, Fallu, J, Sebastien & Pagani, L 2009, 'Student engagement and its relationship with early high school dropout', *Journal of Adolescence*, vol.32, pp. 651-670.

Australian Bureau of Statistics 2011, *Australian Social Trends* March 2011, Year 12 attainment. No. 4102.0.

Australian Council for Education Research 2017, *PISA 2015: Reporting Australia's results*, prepared by S Thomson, L De Bortoli & C Underwood.

Barile, J, Donohue, D, Anthony, E, Baker, A, Weaver, S & Henrich, C 2012, 'Teacher-student relationship climate and school outcomes: Implications for educational policy initiatives', *Journal of Youth and Adolescence*, vol.41, pp. 256-267.

Centre for Education Statistics and Evaluation (CESE) 2015, *What works best: Evidence-based practices to help improve NSW student performance*, NSW Department of Education.

Croninger, R & Lee, V 2001, 'Social capital and dropping out of high school: Benefits to at-risk students of teachers' support and guidance', *Teachers College Record*, vol.103, no.4, pp. 548-581.

Eccles, J & Wigfield, A 2002, 'Motivational beliefs, values, and goals', *Annual Review of Psychology*, vol.53. pp. 109-132.

Fall, A & Roberts, G 2012, 'High school dropouts: Interactions between social context, self-perceptions, school engagement, and student dropout', *Journal of Adolescence*, vol.35, pp. 787-798.

Finn, JD 1989, 'Withdrawing from school', *Review of Educational Research*, vol.59, no.2, pp. 117-142.

Fredricks, J & Eccles J 2006, 'Extra-curricular participation and association with beneficial outcomes? Concurrent and longitudinal relations', *Developmental Psychology*, vol.42, no.4, pp. 698–713.

Krane, V, Karlsson, B, Ness, O & Kim, H 2016, 'Teacher-student relationship, student mental health, and dropout from upper secondary school: A literature review', *Scandinavian Psychologist*, vol.3, no.11.

Lamb, S, Jackson, J, Walstab, A & Huo, S 2015, *Education opportunity in Australia 2015: Who succeeds and who misses out*, Centre for International Research on Education Systems, Mitchell Institute, Melbourne.

Lamb, S & Huo, S 2017, *Counting the costs of lost opportunity in Australian education*, Mitchell Institute Report No. 02/2017.

Lee, V & Burkam, D 2003, 'Dropping out of high school: The role of school organization and structure', *American Educational Research Journal*, vol.40, no.2, pp. 353-393.

Rogers, K 2007, 'Lessons learned about educating the gifted and talented: A synthesis of the research on educational practice', *The Gifted Child Quarterly*, vol.51, no.4, pp. 382-396.

Rumberger, R & Lim, S 2008, *Why students drop out of school: A review of 25 years of research*, California Dropout Research Project.

Shernoff, D, Csikszentmihalyi, M, Shneider, B & Shernoff, E 2003, ''Student engagement in high school classrooms from the perspective of flow theory', *School Psychology Quarterly*, vol.18, pp. 158-176.

Social Research Centre 2016, *NSW Secondary Students' Post-School Destinations and Expectations 2016 Annual Report*, report prepared by P Myers, A Parkes, N Vickers, A Ward & E Corcoran.

Wai, J & Worrell, F 2016, 'A nation at risk – how gifted, low-income kids are left behind', *The Conversation*, 21 March.

Wang, M 2012, 'Educational and career interests in math: A longitudinal examination of the links between classroom environment, motivational beliefs, and interests', *Developmental Psychology*, vol.48, pp. 1643-1657.

Wigfield, A & Cambria, J 2010, 'Students' achievement values, goal orientations, and interest: Definitions, development, and relations to achievement outcomes', *Developmental Review*, vol.30, pp. 1-35.

Yazzie-Mintz, E 2010, *Charting the path from engagement to achievement: A report on the 2009 High School Survey of Student Engagement*, prepared by Centre for Evaluation & Education Policy.

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