

# How long does it take to achieve academically in a second language? Comparing the trajectories of EAL students and first language peers in Queensland schools

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## ABSTRACT

*For the past four decades, the question of how long it takes to achieve academically in a second language has been the subject of research. It is a key policy question informing the allocation of resources for the support of English language learners in schools, with the existing research from the United States (US), Canada and the United Kingdom (UK) showing it takes varying lengths of time depending on a range of variables. Until this present study, no research had been done on the trajectories of English language learners in the Australian context, where increasing numbers of English learners form the student population. As part of a broader mixed-methods study designed to address this gap in the research, we present quantitative analyses of longitudinal school data on NAPLAN reading results for two large regions in Queensland from the years 2009–2015. Using two-way analysis of variance (ANOVA) with repeated measures, we identified the academic trajectories of EAL students as compared with the trajectories of the same age cohort, most of whom are English as a first language speakers. The findings show that EAL students who had been in schools long enough to sit four NAPLAN tests reached parity by Year 7, suggesting that it takes the whole of primary school for them to achieve at the same level as their English-speaking peers. Those who entered between Year 3 and Year 5 reached parity within two to four years of arrival in Australia. For older learners entering school between Year 5 and Year 7, reaching parity took much longer. The implications of these findings are far reaching for policy, teacher preparation, and the provision of high quality language support programs in Australian primary and secondary schools.*

## Introduction

This paper reports on a study addressing the question of how long students for whom English is an additional language (EAL)<sup>1</sup> in the Australian context take to reach comparable academic levels to their English-speaking peers. The study was undertaken in Queensland, led by Queensland University of Technology (QUT) in cooperation with the Department of Education. It was a mixed methods study, utilising longitudinal school data for a large sample of students attending Queensland government schools, as well as qualitative accounts from students and teachers on the variables that contribute to academic success. In this paper, we focus on the longitudinal school data as a means of identifying EAL students and their academic trajectories. We argue that our sample is broadly representative of the diversity of Australian schools: the majority of Australian EAL students enrol in government schools, and our data cover the large urban corridor of South East Queensland which is a migrant settlement area (Australian Government Department of Social Services, 2014).

The question of ‘how long’ has been explored in detail in the United States (US), Canada, and the United Kingdom (UK), and is a key policy question informing the allocation of resources for the support of EAL students in the school context. In Australia, the question has great currency and remains unanswered. Our interest in answering the question of how long aligns with imperatives documented in the 2008 Melbourne Declaration on Educational Goals for Young Australians in which the first goal of Australian schooling is to promote equity and excellence; this means ensuring that all students have access to high-quality schooling and are free from discrimination (Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA), 2008). In the declaration, differences in language, culture and ethnicity, among others, are recognised as potential sources of discrimination. We argue that access to adequate and sufficient English language support for second language learners is aligned with the intentions of the declaration.

Despite Australia being one of the world’s significant immigration destinations, ranked tenth based on United Nations migration data (Migration Policy Institute, n.d.), it is impossible to quantify the numbers of students in government schools for whom English is a second or additional language. Defining EAL students and identifying them within the school data was one of the challenges of the project. The Australian Curriculum, Assessment and Reporting Authority (ACARA) has responsibility for the Australian national curriculum, administration of national assessments including

National Assessment Program: Literacy and Numeracy (NAPLAN) and reporting on schooling in Australia (ACARA, 2016). ACARA oversees and regulates the collection of student data through school systems in Australia. This process is systematised by the national *Data Standards Manual: Student Background Characteristics* (Australian Curriculum, Assessment and Reporting Authority (ACARA), 2017). The manual provides the category of Language Background Other Than English (LBOTE), defined as an indication of whether the child or their parents speak a language other than English at home. Notably, this category is not intended to provide any indication of English language proficiency (Creagh, 2014).

School-based enrolment data is another means by which the English language profile of students is recorded. At each school Department of Education enrolment forms feature a tick box related to the EAL status of the student being enrolled, a so-called ESL flag. The ticking of the box is at the discretion of the school enrolment officer and the parents or carers who may not wish to divulge the language status of the child. An added difficulty with the school-based data is that EAL status in primary schooling is not carried over on secondary documentation if the student is no longer eligible for EAL support. For these reasons and those associated with the ACARA data discussed above, challenges arose for the project in the limited capacity to identify EAL students longitudinally in the school system. A key aim of the research project, therefore, was to discern a methodology for reliably identifying EAL students within the departmental data.

This paper reports the quantitative phase of the mixed-methods project, focussing on the academic trajectories of a sample of Queensland EAL students. The aim of this phase was twofold: (i) to develop a method for identifying EAL students given the issues outlined above, and (ii) to determine how long it took a sample of EAL students to achieve parity with their same-age English-speaking peers on standardised mainstream tests of academic reading. To date in Australia, no longitudinal research has been conducted on EAL students’ academic development across time and different age levels. The paper addresses the following question: how long does it take EAL students to reach academic parity with their English-speaking peers, based on the National Assessment Program: Literacy and Numeracy (hereafter NAPLAN) reading performance? The analysis was refined to consider the ‘how long’ question in relation to three age groups: (i) students who participated in four NAPLAN tests, beginning in Year 3 in 2009; (ii) students who, because of their later arrival to Australia, participated in three

NAPLAN tests, from Year 5 through to Year 9; and (iii) students who arrived later again and participated in only Year 7 (2013) and Year 9 (2015) NAPLAN tests.

The paper is organised in three parts: first, a comprehensive overview of the literature on the ‘how long’ question is presented, highlighting the different methodologies used to investigate the problem. Second, an overview of the research methodology used for this project is outlined including descriptive statistics and the findings of a series of repeated measures of analysis of variance. Finally, the implications of findings are presented before a discussion and recommendations for further study.

### Literature review

The question of how long students take to acquire a second language was the focus of ground-breaking studies in Canada and the US in the 1980s and 1990s. Of interest in this paper are the studies that utilised standardised test data and other formalised measurement scores as the source of claims about academic trajectories for students using English as a second or additional language (ESL/EAL). In Canada, Cummins (1981) tracked the second language acquisition of 1,210 English learners in grades Kindergarten (K) to 9 and using his findings, theorised two kinds of second language proficiency: basic interpersonal communicative skills (BICS) and cognitive academic language proficiency (CALP). English as an additional language (EAL) students were deemed to have reached academic English proficiency when language background was no longer associated with performance on standardised school tests, and students were performing at an academic level equivalent to their English-speaking peers. Cummins found that students could develop BICS within two years but that for the younger children aged five to seven years, with little or no education in first language, it took from five to seven years to acquire CALP, based on standardised test performance. Cummins (1981, 2008) hypothesised that students who had experienced some education in their first language were utilising a common underlying proficiency of linguistic and conceptual knowledge, facilitating the accelerated development of the second language.

In the US, Collier (1987) and Thomas and Collier (1989) carried out a similar study, expanding the research to include 1,548 English language learners in grades K to 11. They used mainstream standardised testing to measure the comparative CALP performance of English language learners and their English speaking peers at Grades 4, 6, 8 and 11. The researchers were able to control for the educational experiences of the study sample through measures such as on-arrival assessment processes for newly arrived students entering the

school system that recorded previous schooling and level of language proficiency in the first language (L1). The study sample in the Thomas and Collier study was controlled for socio-economic status and level of education in the first language – the group was predominantly middle class with students who had either begun their education in the US or who had age-equivalent education in the first language if they entered school in the US after kindergarten (Collier, 1987; Thomas & Collier, 1989). Like Cummins, Thomas and Collier (1989) were interested in determining how many years of schooling were required for English language learner achievement to reach the average scores of English speakers, and to what extent age was influential on the rate of acquisition of academic English. They found that students who entered school aged eight to eleven on arrival reached national averages within two years of arrival into the US; however, students who entered aged five to seven years required five to seven years to catch up to their English-speaking peers and students who were in the oldest group, aged from twelve to fifteen, were substantially below their peers after four years, except in mathematics (Collier, 1987; Thomas & Collier, 1989).

Further in the US, Hakuta, Butler and Witt (2000) also used standardised testing to determine acquisition of both BICS and of CALP for students in Grades 1 to 6. For BICS, they utilised standardised oral proficiency tests and for CALP, English reading and writing tests. In a point of difference from earlier studies, this study compared the performance of students from high and low poverty schools. The authors found that oral proficiency took from three to five years to develop and academic English proficiency took four to seven years, and that socioeconomic status was associated with the rate of progress (Hakuta et al., 2000).

In the US, more recent longitudinal studies continue to extend the field. These include, for example, studies of the comparative performance of language minority learners who either speak English or who have limited English in Kindergarten (Kieffer, 2008); as well as studies measuring the academic progress and pathways of students who have progressed beyond English language programs (de Jong, 2004; Kieffer & Parker, 2017). Thompson (2017) investigated the time required for US language minority students to satisfy the assessment requirements in order to exit language programs, and also examined the characteristics of learners who never attain reclassification as proficient in English. The study found that for language learners who enter school in kindergarten, the rate of reclassification to ‘former English language learner’ rises steadily across primary school, peaking at Grade 6.<sup>2</sup> However, it took six to seven years for 60% of students to reach required

levels of English for reclassification (Thompson, 2017)



In the UK, Demie (2013) focused on fluency using the records of 940 EAL students across Grades 6 to 11 who were classified as being fully fluent in English. He examined the learners' English language pathways and the previous stages of their school-based assessments of English fluency. The findings were that the students took six years on average to reach fluency but that there was variation at each of the fluency stages. Students in Grade 6, the youngest in the sample, progressed faster through the stages and had reached fluency after 5.3 years on average.

The above studies show considerable research engagement with the 'how long' question in countries where English is the language of schooling. In Australia, however, there has been little research in quantitatively tracking the performance of English language learners longitudinally. Studies by Australian scholars reference the North American research of Cummins, Collier, and Collier and Thomas from the 1980s and 1990s. The reported time periods for EAL academic development are consistently those established in the North American research: five to seven years (Gibbons, 2002), seven to eight years (Hammond, 2012), and seven to ten years (Windle & Miller, 2012). Due to the advent of Australian national standardised testing in literacy and numeracy (NAPLAN), it is now possible to explore more closely EAL student performance over time and at different stages of schooling. A key aim of the project reported here was to provide up-to-date information about EAL student academic trajectories across the duration of schooling in the Australian context.<sup>3</sup>

This focus of the project is beneficial for national purposes since our study is representative of the Australian context where the distribution of migrants and refugees is mostly contained to large urban centres, such as the south east corner of Queensland where we located the study. The study also contributes to the international literature. That being said, a key concern remained the issue of identification and the problems with the category 'Language Background Other than English' (LBOTE) used to disaggregate language background students in the NAPLAN test, given that this category is not accompanied by a measurement of English language proficiency. With this concern in mind, the study undertook to explore the longitudinal pathways of EAL students in comparison to their English-speaking peers using the NAPLAN reading test scores as the outcome variable of interest.

### ***Brief overview of dataset and preliminary analysis***

Following ethics approval from the Queensland

University of Technology (ID: 1500000213: Kettle, Creagh, Alford, Comber) and Queensland Department of Education approval to conduct the research, the research team took receipt of a de-identified longitudinal dataset consisting of demographic and assessment variables for 20,365 students with school records from or within the period 2007 to 2015. This range ensured that the data included records from Year 1 (if available) for students who participated in Year 3 NAPLAN, 2009, tracking students across NAPLAN tests for the years 2009, 2011, 2013 and 2015. All statistical work in this project was completed using Stata V 13.

Our goal in the analysis was to track NAPLAN reading performance over consecutive tests, to first identify development in reading performance across school years for EAL students, and then to determine to what extent language background was a factor in differentiating the performance of EAL students and their English as a first language peers. As noted earlier, there were considerable challenges in generating a suitable indicator of EAL status.

### ***The problem of generating an indicator of English as an Additional Language status***

This administrative dataset had a number of language-related variables; however, most variables were unable to confidently and consistently indicate English language learner status. The variables included the following:

Language Background Other than English (LBOTE) is an indicator that the student language background is other than English and that either the students' or one of the parents' main languages is other than English (DET, 2015). This information is derived from the enrolment form. (n=4,244)

Main Language Other Than English (MLOTE): the student's main language is other than English (DET, 2015). This information is derived from the enrolment form. (n=3,186)

ESL Flag is a Queensland indicator of whether or not the student is learning English as a second language (DET, 2015). This information is generated by an ESL teacher or classroom teacher, or on enrolment, *if* the student is identified as requiring an English as a Second Language support program. It is *not* automatically indicated if the student has identified as LBOTE or MLOTE. The ESL Flag has been in operation since 2010, and students who accessed ESL support before this time may not be identified with an ESL Flag, if they had completed their allocation of funded ESL support by 2010 (n=2,258).

English as an Additional Language or Dialect (EAL/D) Bandscales in Listening, Speaking, Reading and Writing are assessment tools used by ESL teachers

to map the academic language development of students learning English as an additional language or dialect. Only those students who are English language learners and who have accessed a formal ESL program would have records of their EAL/D Bandscale levels. Not all EAL/D students have access to an ESL program and so the Bandscales alone will not provide a complete count of all EAL/D students in the dataset. A relatively smaller group of students had Bandscales records (n=890).

Visa subclass has been used to disaggregate migrant settlement, as a proxy indicator of prior schooling, particularly for refugee background groups, who may have come from countries where there were limited educational opportunities (Creagh, 2014). However, in the dataset, visa subclass had considerable missing data, and may be overwritten or deleted when students change schools (n=1,246).

In order to have a trustworthy indicator of language learner status then, we generated an ESL indicator for those students who had either been given an ESL flag and/or had at least one EAL/D Bandscale record. There were 2,414 students in the dataset who satisfied either of these requirements.

Because of the mismatch in numbers between the larger English as first language group (n=17,944) and the much smaller EAL student group (n=2,414), we used propensity scores to generate a matched sample of English speakers. Propensity scores can be used in observational studies to reduce possible bias and entail the generation of a matched group, in our case, with similar demographic characteristics to the EAL group (see Becker & Ichino, 2002). In other words, propensity score matching is a way of finding a subset (from the large English as first language speakers' group) which is matched in characteristics to the EAL group. The matching was based on age, gender and highest school and post-school education level of parent for all cases with a 2015 NAPLAN reading score. Table 1 provides demographic details for the EAL and the matched non-EAL group. The original EAL sample is slightly reduced because of missing NAPLAN data. Whilst the groups are similar, a greater proportion of the parents in the EAL group have the lowest level of school and post-school education.

### *The analysis*

The following two-way analysis of variance (ANOVA) with repeated measures compared the performance of a matched sample of EAL and non-EAL students who had completed up to four consecutive NAPLAN tests. Repeated measures ANOVAs allowed us to compare the performance of two groups, across repeated test performances. We were interested in understanding

**Table 1. Demographic details, matched EAL and non-EAL group (percentages of group).**

	EAL group (n=1,872)	Non-EAL group (n=1,871)
Female	853 (45.6)	831 (44.4)
Age* (2015)		
13	794 (42.4)	741 (39.6)
14	950 (50.7)	1,020 (54.5)
15	124 (6.6)	107 (5.7)
Parents' highest combined school education		
Year 9 equivalent or below	193 (10.3)	67 (3.4)
Year 10 or equivalent	106 (5.7)	135 (7)
Year 11 or equivalent	78 (4)	123 (6.6)
Year 12 or equivalent	1,368 (73)	1,427 (76)
Not given	127 (7)	119 (6)
Parents' highest combined post school education		
No non-school qualification	376 (20)	277 (14.8)
Certificate I–IV, including trade	335 (17.9)	461 (24.6)
Advanced diploma/diploma	259 (13.8)	273 (14.6)
Bachelor degree or above	709 (37.9)	714 (38)
Not given	193 (10)	146 (7.8)

Source: Department of Education & Training, 2015.

\* ESL group has 2 students aged 12, and 3 students aged 16. Non-ESL group has 2 students aged 16.

how language might impact on test performance, dependent on age, in comparison to a control group of English as first language speakers. In order to explore this research problem, three analyses of student performance were undertaken. All analyses were carried out using the same matched sample.

The first analysis was for those who had participated in **four tests** (2009, 2011, 2013 and 2015), and included within the EAL group students who may have begun their schooling in Australia, or commenced in Years

**Table 2. Range of Australian school years and ages for each group**

Group	Years of tests (year level)	School year level in Australia (age range for commencing school in Australia)
1	2009 ( 3), 2011 (5), 2013 (7), 2015 (9)	May have been born in Australia, or commenced school in years 1,2 or 3 (5–8 years of age)
2	2011 (5), 2013 (7), 2015 (9)	Commenced school in mid-year* 3, 4 or 5 (7–10 years of age on arrival)
3	2013 (7), 2015 (9)	Commenced school in mid-year 5, 6 or 7 (9–12 years of age on arrival)

Source: Department of Education and Training, 2015.

\* The NAPLAN test is held in May each year, which in Australia, is the second term of the four term school year.

1, 2, or early in Year 3. The second analysis was for those EAL students who had only participated in **three tests**, (2011, 2013 and 2015), and who had arrived in Australia from June 2009, compared to the test performance of non-EAL students who participated in these three tests. The third analysis was for those EAL students who participated in **two tests**, 2013 and 2015, in Years 7 and 9, compared to non-EAL students who participated in these tests. This EAL group arrived in Australia no earlier than June 2010. It should be noted that there is a one-year exemption from participation in the NAPLAN test for newly-arrived EAL students, dependent on their level of English. Thus, students could have had at least one year of schooling in Australia prior to being required to sit the test. As the test occurs every second year of schooling, this can potentially mean that a student could have up to two years of schooling before they are required to participate in the NAPLAN test. Table 2 provides a summary overview of the three groups and the range of school years within which they arrived in Australia. Exact determination of date of arrival for the EAL group was hampered by considerable missing data; thus it was not possible to more strictly delineate length of time in Australia prior to test. Similarly, no data were collected about years or quality of schooling prior to arrival in Australia so it is not possible to disaggregate the EAL group based on pre-arrival years and experiences of education.

**Analysis: Group 1 (Four tests – Years 3, 5, 7 and 9)**

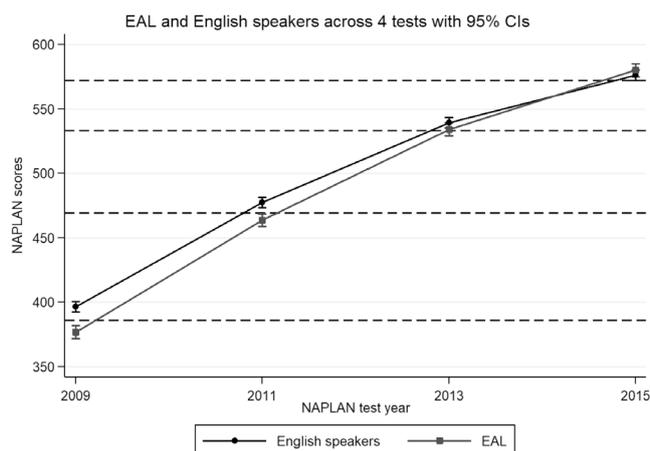
The first analysis was aimed at comparing the

improvement in NAPLAN performance across four consecutive NAPLAN tests from Year 3 in 2009 through to Year 9 in 2015. NAPLAN scores were evenly distributed for each of the groups, for each year of the tests. The EAL students in this group could potentially have been born in Australia or arrived at school in the time period prior to the Year 3 test. It is possible therefore, that the students have had one to two years of Australian schooling by the 2009 test, and by 2015, this group may have had a maximum of nine years of schooling in Australia. The mean NAPLAN scores of EAL and non-EAL students were compared using repeated-measures ANOVAs, for those students in both groups who had completed all four years of the NAPLAN test. (Non-EAL n=1,225, EAL, n z=822). Figure 1 presents the trajectories of each group across the four tests. In order to support interpretation of the performance achieved by each group, the broken horizontal lines indicate the Queensland average scores for each of the four test years, with Year 3 (2009) at the lowest level, moving up to Year 5 (2011), then Year 7 (2013), then Year 9 (2015).

In order to compare NAPLAN scores between the EAL group and the non-EAL ‘control’ group for each of the years of the test, independent samples t-tests were conducted. Independent sample t-tests are used to examine whether there is a statistically significant difference in performance between two groups of different participants (EAL and non-EAL, in this case). For 2009, (both groups in Year 3) the test was found to be statistically significant  $t(2045)=5.35, p<0.001, d=0.24$ . The effect size for this analysis ( $d=0.24$ ) equates to Cohen’s (1992) convention for a small effect. These results suggest that there is a small but statistically significant difference between the EAL (M=376.8, SD=74.3) and non-EAL (M=396.4, SD=85.25) sample groups when they both first participated in the Year 3 2009 NAPLAN test.

For 2011 (Year 5), the t-test was again found to be statistically significant  $t(2045)=4.2, p <0.001, d=0.19$ . The effect size for this analysis ( $d=0.19$ ) equates to Cohen’s (1992) convention for a small effect. These results suggest that in the 2011 test, again, there is a small but statistically significant difference between the EAL (M=463.7, SD=69.5) and non-EAL (M=477.5, SD=73.2) sample groups when they both participated in the Year 5 2011 NAPLAN test.

For 2013 (both groups now in Year 7), the t-test was found to be close to but not statistically significant  $t(2045)=1.7, p=0.049, d=0.07$ . The effect size for this analysis ( $d=0.07$ ) suggests low practical difference in mean scores. These results indicate that in the 2013 test, there is little statistical nor practical difference between the EAL (M=534.4, SD=68.2) and non-ESL



**Figure 1.** Average NAPLAN reading achievement for EAL and English speakers for 4 consecutive NAPLAN tests from Year 3 to Year 9.

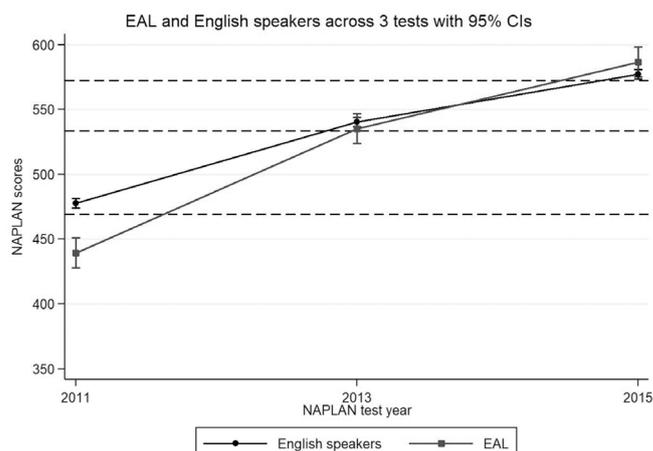
( $M=539.47$ ,  $SD=67.4$ ) sample groups when they both participated in the Year 7 2013 NAPLAN test.

For 2015 (Year 9), the t-test was not statistically significant. This and the effect size for this analysis ( $d=-.06$ ) suggests that there is no difference between the two groups in their average NAPLAN performance in reading. For 2015 the average performance for the EAL group was 580.2 ( $SD 67.7$ ) and for the non-EAL group the average result was 576.2 ( $SD 67.4$ ).

These results indicate that parity with English speaking students with similar socio-demographic characteristics occurred by Year 7 (2013) where there are overlapping confidence intervals (represented on Figure 1 by the circle with horizontal lines on either side at 2013 and 2015) suggesting it is possible that the two groups cannot be distinguished from each other. In other words, the range of reading test scores, within which the EAL students are achieving on average, overlaps with the range being achieved by the English as first language group rendering the two groups comparable. The range in years to reach parity is from a maximum of 7 years of schooling for those students who have only attended school in Australia, to a minimum of four years of Australian schooling for those students who arrived in 2009.

#### **Analysis: Group 2 (Three tests – Years 5, 7 and 9)**

The analysis for group 2 tracks the performance of a slightly older group of EAL students, in comparison to their English as first language peers across three consecutive NAPLAN tests, from Year 5 in 2011 through to Year 9 in 2015. Prior to sitting the Year 5 NAPLAN test, the EAL group potentially arrived within the schooling years from Year 2 up to pre-test in Year 5. The trajectory shown in Figure 2 indicates that



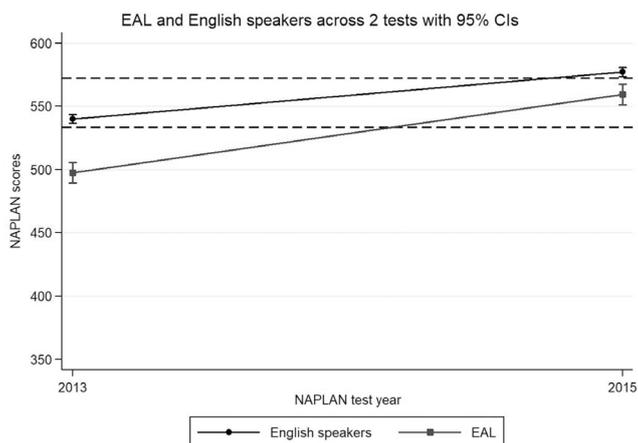
**Figure 2.** Average NAPLAN reading achievement for EAL and English speakers for 3 consecutive NAPLAN tests, from Year 5 to Year 9.

in Year 5, the EAL group are on average performing below the state average, compared to the non-EAL group, whose average performance is a little above the state average. The groups reach parity by Year 7. Independent samples t-tests were conducted to compare the groups' average performances for each year of the test. For 2011 (Year 5), the difference between the two scores was found to be statistically significant  $t(1498)=5.9$ ,  $p<0.001$ ,  $d=0.52$ . The effect size for this analysis ( $d=0.52$ ) equates to Cohen's (1992) convention for a medium effect. In 2011, therefore, there is a statistically significant difference between the EAL ( $M=439.3$ ,  $SD=76.1$ ) and non-EAL ( $M=477.7$ ,  $SD=74.01$ ) sample groups when they both participated in the Year 5 2011 NAPLAN test.

For 2013, when both groups are in Year 7, the t-test was found to be not statistically significant. The effect size for this analysis ( $d=0.07$ ) indicates that there is little practical difference in the average performance of the two groups. These results are unsurprising given the average performance of the sample groups: EAL ( $M=535.2$ ,  $SD=73.8$ ) and non-EAL ( $M=540.3$ ,  $SD=67.7$ ) when they participated in the Year 7 2013 NAPLAN test. With some overlap of confidence intervals in average scores and a small effect size differentiating the EAL and non-EAL group, the students within this group, who have potentially had some schooling prior to arriving in Australia, although the quality and extent of this are unknown, are reaching parity on the NAPLAN reading test after two to four years in Australia.

#### **Analysis: Group 3 (Two tests – Year 7 and 9)**

The third analysis compares the performance of EAL students and non-EAL students for two tests at Year 7 and Year 9. This analysis includes EAL students who may have arrived from 2010. The age range of this



**Figure 3.** Average NAPLAN reading achievement for EAL and English speakers for 2 consecutive NAPLAN tests, from Year 7 to Year 9.

oldest group is from 8 to 12 years on arrival. In Year 7, the two groups are approximately 50 NAPLAN points apart in their average performance. This constitutes approximately one band level in the NAPLAN test. The EAL group had not reached parity with the non-EAL group by the Year 9 NAPLAN test in 2015.

Again, independent samples t-tests were conducted. For 2013 (Year 7), the t-test was statistically significant  $t(1784) = 9.4, p < 0.001, d = 0.61$ . The effect size for this analysis ( $d = 0.61$ ) equates to Cohen’s (1992) convention for a medium effect indicating that there is a medium and statistically significant difference between the EAL ( $M = 497.57, SD = 82.4$ ) and non-EAL ( $M = 500.1, SD = 67.4$ ) sample groups when they both participated in the Year 7 2013 NAPLAN test. For 2015 (Year 9 for both groups), the results of the t-test were again statistically significant  $t(1784) = 3.98, p < 0.001, d = 0.26$ . For 2015, the average performance for the EAL group was 559.4 ( $SD = 77.0$ ) and for the non-EAL group the average result was 577.2 ( $SD = 67.6$ ) and the effect size for this analysis ( $d = 0.26$ ) suggests that there is a small but statistically significant difference between the two groups in their average NAPLAN performance in reading. For the EAL students in this analysis, confidence intervals are not overlapping, and although the difference between the two groups is diminishing, parity with English as first-language peers has not been reached by Year 9.

## Discussion

### EAL learner academic trajectories

This paper is reporting the analysis of three age groups of EAL students, comparing their performance on the Australian NAPLAN reading test, to a matched sample of English-speaking students. The matched sample allowed us to control for age, gender and socioeconomic

factors measured by parent levels of education. Our design has enabled us to track three different groups of EAL students, based on their arrival into the Australian education system. Each of these groups is progressively older: the first group commenced schooling in Australia in the age range 5 to 8 years, and in the school Year 1 to Year 3; the second group commenced school in Australia aged between 7 and 10, in school Year 3 to Year 5, and the oldest group arrived aged between 9 and 12, in school Year 5 to Year 7. Each group has been tracked across consecutive NAPLAN tests to compare their average performance to their matched English-speaking peers. There are particular challenges in the identification of EAL students in the Queensland and Australian school system; however, we feel that this group of learners are representative of EAL students in Queensland schools because they have been identified as an English language learner in their school data or they have records of assessment data which are only provided for EAL students, through the EAL Band-scales. There are a number of broad patterns in the analysis which correspond to the earlier quantitative longitudinal studies carried out in Canada, the US and the UK. Our study supports the finding that language does make a difference on standardised tests and that acquisition of academic English takes a number of years. These findings, across the three groups, are presented in a more nuanced way below.

The youngest group, with four years of NAPLAN tests, was able to reach parity by Year 7 and their trajectory was similar to that of their English-speaking peers. Whilst this is based on average performance, the data indicate that it takes the whole of primary school for young EAL students to converge academically with their English-speaking peers. Based on the finding of average performances, it is recognised that some individual students will reach parity sooner while others may not within this time span. The finding has implications for the provision of EAL specialist assistance and the professional capabilities of classroom teachers to support learners across stages of schooling. This is particularly important if those students who have a lower trajectory are to be identified and appropriate action taken.

The next group, with three years of NAPLAN tests, entered Australian schools between the ages of seven and ten and had the most accelerated pathway relative to their English-speaking peers, reaching academic parity by the Year 7 NAPLAN test. Their average starting point was below the Queensland average, and some 40 NAPLAN points below the average performance of the English-speaking group. Convergence was achieved by the second test. The range of school years the group encompasses is from Year 3 to Year 5, meaning that

parity was reached within two to four years of arrival in Australia. We hypothesise that there could be a number of factors at play with this group, and draw on Cummins's (1981) idea of a cognitive underlying proficiency, in which students are able to transfer learning from their experiences of school in first language, to enable language acquisition in the second language. This age group may well have had up to four years of school in home countries, equivalent to schooling in Australia. However, it is currently not possible to test this hypothesis using existing quantitative data because there is no collection of information concerning prior schooling when students enrol at school in Queensland.

The third group, with only two years of NAPLAN tests, represents the oldest and most recently arrived students in the study. This group arrived in Australia between school Year 5 and Year 7, aged between nine and 12 years, and the youngest in the group potentially transitioned from primary school to high school before taking the NAPLAN test. In the Year 7 test, this group performed on average a full NAPLAN band width below the English-speaking group, and had a large spread of scores, reported in the standard deviation. Whilst they progressed between Year 7 and Year 9, they had not reached parity and were still some 20 NAPLAN points below their peers, and neither had they reached the state average performance. It might be assumed that older students had more years of schooling in their first language; however, this has not translated into the same NAPLAN performance reported for the second group. In this instance, with both tests occurring in secondary school, it is likely that the characteristics of the more abstract and complex secondary curriculum places demands on the level and extent of academic language proficiency required. Our study endorses the findings of Collier (1987) and Demie (2013) that the older students take longer to converge academically with their peers.

This analysis, therefore, strongly suggests that EAL students who enter schooling from school Year 5 through to Year 7 continue to need support with their academic English language development beyond Year 9 as they have not, on average, reached parity with their English-speaking peers by Year 9. Given the increasing challenges and complexity of the curriculum for the senior years of schooling from Years 10 to 12, EAL support needs to be maintained throughout all years of secondary schooling.

#### **EAL data validity and reliability**

The issue of data collection in relation to EAL students is noted as a challenge within the current reporting mechanisms. We have overcome the problem as best possible through the utilisation of an amalgam of EAL

indicators. However, we have been unable to disaggregate the EAL student group statistically to understand the variations in ways that prior schooling experiences impact on EAL student performance. Within the broader research project, the qualitative phase using interviews and focus groups addressed the variations in students' individual experiences and the variables that they believe impacted their academic trajectories. The students' accounts are augmented by those of EAL specialist teachers and a school leader reporting on innovations in school policies and practices which addressed teacher capacity building and whole-of-school EAL support. These findings will be presented in a forthcoming publication.

Our research has shown that in order to conduct large-scale, quantitative research with EAL learners, significant change needs to occur in school data collection practices – in Queensland, at least – to better capture their diversity as a group. Importantly, this information will also assist schools in providing more targeted programs and interventions to aid all students who are studying in English while learning English. We argue that school data should include details on students' experiences of education prior to arrival in Australia and could include country and years of schooling. The EAL population in Australia is characterised by enormous diversity with some students experiencing schooling which is equivalent to the Australian system, and other students having interrupted schooling, or experiences of school vastly different from those they experience in Australian schools.

Similarly, the capacity to continue to track students who at some stage in their schooling are provided with EAL support would enable practitioners to monitor, and indeed, be accountable for the ongoing development of EAL student academic performance. Currently when students move schools, these details are often lost or overwritten. This is notably in the case of students who move interstate or change schools between primary and secondary levels. Unlike the US which is examining the pathways of former ELL students, the lack of accessible, reliable longitudinal data in Australia makes such tracking extremely difficult.

#### **Conclusion**

In this study, we have presented empirical evidence that the development of academic English for EAL students beginning their school years in Australia can take the whole of primary school. For those students who enter school in the later years of primary or early in secondary the situation is the same: academic English takes a considerable number of years to develop and for the older group, the challenges are both in relation

to developing academic English and engaging with an increasingly abstract and complex curriculum.

We argue that the findings make a significant contribution to understandings of EAL student academic trajectories in the Australian context and provide an important foundation for discussions about academic support for EAL students across all levels of schooling.

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### Notes

- 1 English as an Additional Language (EAL) is the current preferred Australian nomenclature for students who are in the process of acquiring English while they are studying in English. This is the same in the United Kingdom. Equivalent terminology in Australia includes English as a Second Language (ESL) and in the United States, English Language Learner (ELL).
- 2 Data on educational outcomes are also available in an Organisation for Economic Cooperation and Development (OECD) (2018) report on migrant education and the factors that shape positive well-being outcomes. While Australian data are provided in the report, they are Programme for International Student Assessment (PISA) data on reading, mathematical and scientific literacy used for comparative purposes. A key focus of the OECD (2018) report was factors contributing to resilience in academic performance and schooling; however, the focus of the study reported here which aligns with the original North American work was the question of 'How Long', that is, how long do migrant students entering Australian schooling at different stages take to reach academic parity with first-language English speaking peers.
- 3 In the US ELLs must demonstrate adequate English language levels across a range of assessment tasks in order to be reclassified and moved into mainstream classrooms.

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