How long it takes to learn English while learning the curriculum

New evidence from 110,000 English as an additional language students in New South Wales public schools over 9 years

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Acknowledgement of Country

AERO acknowledges the Traditional Custodians of the lands, waterways, skies, islands and sea Country across Australia. We pay our deepest respects to First Nations cultures and Elders past and present. We endeavour to continually value and learn from First Nations knowledges and educational practices.

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List of abbreviations

Abbreviation	Full term
ACARA	Australian Curriculum, Assessment and Reporting Authority
ACTA	Australian Council of TESOL Associations
AFT	Accelerated failure time
AIC	Akaike information criteria
ANOVA	Analysis of variance
(B/E)	Beginning/Emerging
(B)	Beginning
BICS	Basic interpersonal communicative skills
(C)	Consolidating
CALP	Cognitive academic language proficiency
CESE	Centre for Education Statistics and Evaluation
(D)	Developing
DoE	Department of Education
(E)	Emerging
EAL	English as an additional language
EAL/D	English as an additional language or dialect
IEC	Intensive English Centre
IEHS	Intensive English High School
LBOTE	Language background other than English
NAPLAN	National Assessment Program – Literacy and Numeracy
NESA	NSW Education Standards Authority
RQ	Research question
SD	Standard deviation
SEA	Socio-educational advantage
SES	Socio-economic status
SQ	Sub-question
WLE	Weighted likelihood estimates

Summary

This summary provides:

- an overview of the project
- the key findings and implications of the research.

Context and aim

Approximately 30% of students in Australian schools are from language backgrounds other than English (LBOTE). Some LBOTE students speak English as their first language and do not require English language support, while others (about 25% of the student population) are learning English as an additional language or dialect (EAL/D). These students face the challenging task of learning English while, at the same time, learning the curriculum through English. As such, EAL/D students need 'targeted, systematic and explicit instruction based on their language needs and prior learning' (Australian Curriculum, Assessment and Reporting Authority [ACARA], n.d.-a). English language proficiency is important for participating in all parts of curriculum learning. Without appropriate instruction and support, EAL/D students are at risk of academic underachievement and plateaus in their English language and literacy skills (Australian Council of TESOL Associations [ACTA], 2022).

Historically, there has been limited evidence regarding the length of time required for EAL/D students in Australian schools to develop the level of English necessary to participate in curriculum learning. While considerable research into how long it takes students to learn English has been undertaken overseas over the past 40 years, little research has been conducted in Australia. The aim of this project, therefore, was to contribute evidence of how long it takes Australian students to develop the level of English required for participation in curriculum learning. This aim included describing students' progress through the phases of English language development outlined in the EAL/D Learning Progression: Foundation to Year 10 (ACARA, 2015). Figure 1 illustrates the sequence and nature of these phases:

Figure 1: Phases of English language learning – EAL/D Learning Progression: Foundation to Year 10

Beginning English	Emerging English	Developing English	Consolidating English
Students who are new to learning English.	Students who have a growing degree of print literacy and oral language competency with English.	Students who are further developing their knowledge of print literacy and oral language competency with English.	Students in this phase have a sound knowledge of spoken and written English, including a growing competency with academic language but require targeted support with academic language and cultural knowledge.

Source: The EAL/D Learning Progression: Foundation to Year 10 (ACARA, 2015).

Research into how long it takes to learn English is methodologically complex. Achieving the project's aim was made possible by longitudinal and comprehensive data provided by the NSW Department of Education (DoE) – Australia's most populous education system (Australian Bureau of Statistics, 2023) and one with a high proportion of LBOTE students (39.3% in 2024 [NSW DoE, 2024]). The data provided by NSW DoE included NAPLAN results from students in New South Wales public schools from 2014 to 2022 and NSW DoE's EAL/D Annual Survey over the same period. Over 110,000 English as an additional language (EAL) students in New South Wales public schools across primary and secondary years who met the project inclusion criteria were included in this research (see section 3 for further information on research methods). First Nations students who are learning English as an additional dialect were not included in the research due to uncertainty about the completeness of data for First Nations EAL/D students, the differences in experiences compared to EAL students who migrate to Australia, and principles of Indigenous Data Sovereignty, which indicate that research on First Nations students should be led by First Nations researchers in consultation with First Nations communities (see section 1.1 for further information about the project scope).

Key findings

How long it takes EAL students in New South Wales public schools to develop the English language skills to equitably participate in curriculum learning

This research found that the time it takes EAL students to learn English to a level where they can participate in curriculum learning at the same level as their non-EAL peers varies somewhat, but generally, is considerable. Specifically, students commencing school with Beginning levels of English can, on average, expect to equitably participate in curriculum learning after at least 6 years of schooling. This finding aligns with international research which indicates that it takes approximately 5 to 7 years to learn English from Beginner levels. In New South Wales, this means EAL students starting school with Beginning phase English will need English language support throughout primary school. For Beginning English students who commence in later years, continued English language support into secondary school is necessary. Students commencing school at Emerging and Developing phases require, on average, 4 years and 3 years, respectively, to develop the English language skills for equitable participation in curriculum learning.

This research also confirms the significance of students' proficiency in English to their academic achievement. It shows that a typical student (one with a typical demographic profile) at the Developing phase will take 36% less time to access curriculum learning than those at the Beginning phase. Those at the Emerging phase will take 18% less time to progress than Beginners. While those with Consolidating levels of English are likely to have the skills to equitably participate in curriculum learning, they still require targeted support with the academic language and cultural demands of tasks so that they can fully access learning and demonstrate success.

Time required by EAL students in New South Wales public schools to progress through the phases of English language development (Beginning, Developing, Emerging, Consolidating)

The research found that, as students progressed along the English language proficiency continuum, each successive phase took longer to achieve than the phase before. For students starting school between Kindergarten and Year 9, the time for half of the EAL students to progress from the:

- Beginning to Emerging phase was 1 year and 1 month
- Emerging to Developing phase was about 1 year and 8 months
- Developing to Consolidating phase (or higher) was about 2 years and 7 months.

Figure 2: Findings about progress through the phases of ACARA's EAL/D Learning Progression
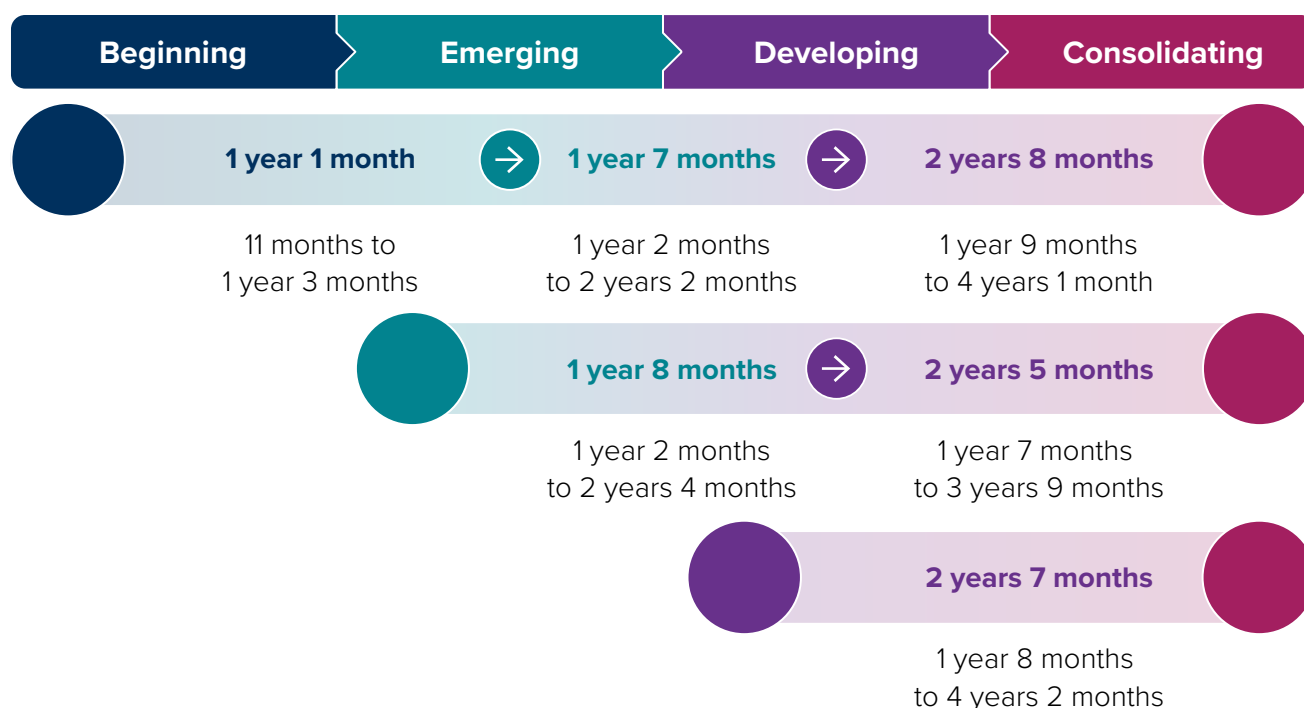
Beginning	Emerging	Developing	Consolidating

	1 year 1 month →	**1 year 7 months** →	**2 years 8 months**	
	11 months to 1 year 3 months	1 year 2 months to 2 years 2 months	1 year 9 months to 4 years 1 month	
		1 year 8 months →	**2 years 5 months**	
		1 year 2 months to 2 years 4 months	1 year 7 months to 3 years 9 months	
			2 years 7 months	
			1 year 8 months to 4 years 2 months	

Note: Horizontal bars show the times taken by the fastest 50% of typical students to reach the next phase.
The times beneath show the estimated times for the fastest 25% and 75% of typical students to reach the next phase.

Additionally, as Figure 2 shows, there was variability in the typical time it took students to progress through the phases. For example, depending on their starting phase, the time it took the fastest 25% and 75% of students to progress from the Developing to the Consolidating phase (or higher) (time ranges indicated beneath the horizontal bars) were about a year faster and over a year slower than the median speed (indicated in horizontal bars).

Impact of demographic characteristics of students in New South Wales public schools on their language progress

Learning English is a complex process that may be impacted by a wide range of factors. The factors identified in this research as being significant predictors of the time students in New South Wales public schools take to learn English included:

- socio-educational disadvantage
- refugee experience
- gender
- the year level students commence schooling in New South Wales public schools.

As Figure 3 shows, students:

- in the lower half of the socio-educational advantage scale progressed 22% slower than those in the higher half of the scale
- with refugee experiences progressed 14% slower than those without.

Males took 6% longer than females (the only gender categories in the datasets). Kindergarten starters were 5% to 15% slower to develop the language skills to equitably participate in curriculum learning than those starting school in New South Wales at higher primary year levels (on average 9% slower).

Figure 3: Impact of certain factors on progression speed

% slower than the reference groups
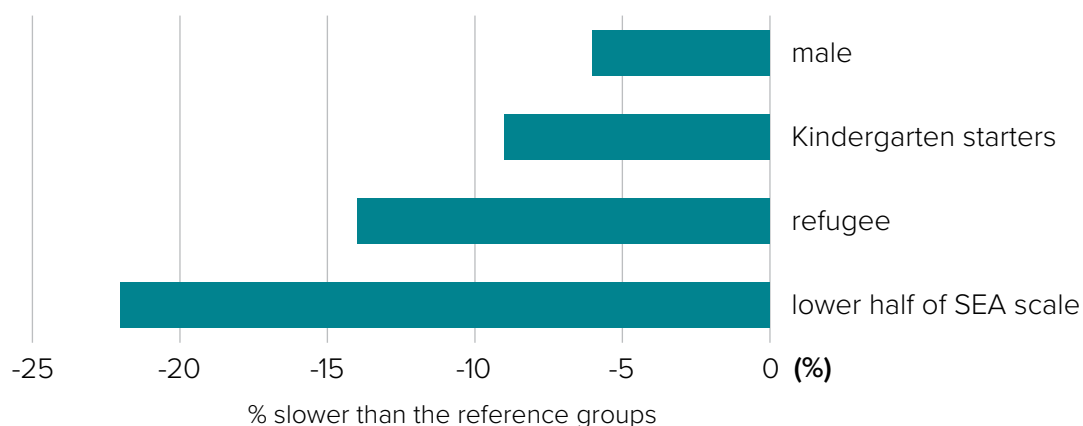
Reference groups: male ref: female, Kindergarten ref: other primary years, refugee ref: non-refugee, lower half of SEA scale ref: upper half of SEA scale.

While these were found to be significant independent predictors – that is, significant when controlling for all other variables included in the modelling – they are not discrete constructs but interrelated and overlapping measures of aspects of students' experiences. These aspects interact with other factors such as teaching practice, individual differences and more to impact how long it takes to learn English as an additional language at school.

Implications

The findings from this research contribute significant new knowledge about how long it takes Australian students who are learning English as an additional language to equitably participate in curriculum learning. The findings also provide new information about the time taken by students to progress through the phases of the EAL/D Learning Progression, and about the range of demographic factors that are most likely to impact students' rates of learning.

This research has important implications for understanding the support needed for EAL students in schools. These implications include:

- the length and continuity of language and literacy support
- teacher and school expectations for EAL student learning
- allocation of EAL resources in response to students' needs.

In the study, students who had English beyond the Beginner stage – who could be considered developing bilinguals – did well in terms of academic progress. This points to a need to support and value first language for all students. The research also has implications for the:

- identification of EAL students as a national priority equity group
- assessment and reporting of EAL students' learning
- professional support available for teachers working with EAL students.

Addressing these implications will ensure EAL/D students receive targeted, systematic and explicit instruction based on their language needs and prior learning (ACARA, n.d.-a).

1. Introduction

1.1 Context

Approximately 30% of students in Australian schools are from language backgrounds other than English (LBOTE).[1] LBOTE students may have migrated from non-English speaking countries, have come to Australia as refugees, have been born in Australia and speak languages other than English, or have languages other than English spoken in their home. These students represent the wide range of cultural and linguistic communities found in Australia and bring rich and diverse experiences, skills and knowledge to their classrooms.

LBOTE students are at diverse stages of learning English. Some speak English as their primary language and do not require specialist English language support. Others are at various stages of learning English as an additional language or dialect (EAL/D) and require ongoing support with their English language and literacy development. These EAL/D students make up approximately 25% of primary and secondary students in Australia (Australian Curriculum, Assessment and Reporting Authority [ACARA], n.d.-a) and are unevenly distributed among schools, with some large metropolitan schools comprising up to 90% EAL/D students, while other schools have few EAL/D students.

The focus of this project is the educational progress of students learning English as an additional language (EAL). For this reason, the term EAL, rather than English as an additional language or dialect (EAL/D) is used in this report. The term EAL/D includes students who speak a dialect of English (other than Standard Australian English) as their first language. In Australia, these students are predominately First Nations students. Researching First Nations English language learning is challenging as many First Nations students are not appropriately recognised as English language learners (Angelo & Hudson, 2020; Sellwood & Angelo, 2013). Many First Nations students speak contact languages – creoles and dialects such as Aboriginal English – which are often not recognised as full languages.

This means that First Nations students are under identified as learners of Standard Australian English as an additional dialect (Steele & Wigglesworth, 2023). Furthermore, existing identification processes, refugee services and educator linguistic and cultural knowledge may not be well matched to First Nations EAL/D learning contexts, which creates a unique research context (Angelo & Hudson, 2020; Snow, 2019). Uncertainty about the fullness of data about First Nations EAL/D students, and contextual differences with the EAL students who may have been born and schooled overseas before moving to Australia, were considered significant enough that the methods employed in this project would less reliably capture the experiences of these students. Furthermore, principles of Indigenous Data Sovereignty[2] indicate that research on First Nations students should be led by First Nations researchers in consultation with First Nations communities – another reason to conduct separate research with the 2 student groups.

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1   Proportion estimated from the number of LBOTE enrolments out of the total number of Years 3, 5, 7 and 9 enrolments in Australia which includes students with unknown LBOTE status. ACARA's national NAPLAN participation data for reading in 2023 was used (Australian Curriculum, Assessment and Reporting Authority [ACARA], 2023). The ACARA dataset includes student background information collected for every student (regardless of their NAPLAN participation status) as per the Data Standards Manual: Student Background Characteristics.
2   'Indigenous Data Sovereignty is the right of Indigenous peoples to govern the collection, ownership and application of data about Indigenous communities, peoples, lands and resources' (Australian Institute of Aboriginal and Torres Strait Islander Studies, 2019).

As such, approximately 3,000 First Nations students enrolled in Kindergarten to Year 9 from 2014 to 2022 and flagged as requiring language support in New South Wales public schools (comprising about 1% of EAL/D students) were not included in this research. Research on EAL/D learning of First Nations students is a future project necessary to support strong outcomes from schooling for Australia's First Nations students.

For EAL students in Australian schools, the significant challenge is learning English at the same time as learning the curriculum through English. That is, students must learn the language while at the same time learning through the language (Gibbons, 2015). To ensure that EAL students meet their educational potential, EAL students need 'targeted, systematic and explicit instruction based on their language needs and prior learning' (ACARA, n.d.-a). If support is not present in sufficient measure, or for a long enough period of time commensurate with students' needs, or if teaching practices are not sufficiently systematic and explicit, there is a risk that EAL students may experience academic underachievement, plateauing of their language skills and literacy ceilings (Australian Council of TESOL Associations [ACTA], 2022).

Currently, there is limited evidence regarding the length of time required for EAL students in Australian schools to develop the level of English necessary to equitably participate in curriculum learning. While little research has been conducted in Australia, a considerable body of international research over the past 40 years has addressed the question of how long it takes to learn an additional language (Collier, 1987, 1992; Collier & Thomas, 1989, 2017; Cummins, 1981b, 1984, 1991; Demie, 2013; Hakuta et al., 2000; Kieffer, 2008; Strand & Demie, 2005; Strand & Lindorff, 2020). This research has consistently highlighted the distinction between conversational English and the more demanding academic English, including academic literacy required to levels that are comparable with English-speaking peers. The consensus from the research is that while conversational English can be learned within 1 or 2 years, it takes at least 5 to 7 years, and often longer, for students to develop high levels of academic language and literacy.

Findings from available research, much of which was undertaken in North America, hold relevance to the education of EAL students in Australia. However, differences between Australia and America, especially in terms of learning contexts and the nature of support provided to students, make direct comparisons problematic. Recent research undertaken in Queensland by Creagh et al. (Creagh, Kettle, Alford, Comber & Shield, 2019), provided the first evidence of the length of time required for EAL students in Australian schools to learn English. This project builds on and extends this Australian research in a number of ways, using longitudinal and comprehensive data provided by Australia's most populous schooling system, the NSW Department of Education (DoE). The following section outlines the specific aims of the research.

1.2 Research aims

The overarching aim of this project was to contribute evidence regarding how long it takes EAL students in New South Wales public schools to develop the English language skills to participate equitably in curriculum learning. Participation in curriculum learning requires a range of skills and capabilities, with language and literacy skills critical to equitable access to the curriculum. The term 'equitable access to curriculum learning' is used deliberately in the research to acknowledge the overall educational goal in Australia of equitable access for all students, including EAL students (Council of Australian Governments Education Council, 2019), and to acknowledge the central role of English language and literacy development in the educational progress of EAL students.

While the research recognises that students' abilities to engage with curriculum learning will be impacted by factors that may include, among others, their prior access to formal education, their mathematical skills and their family backgrounds, it also recognises the argument that, without high levels of English, students will not be able to reach their educational potential in Australian schools.

The research also sought to provide information to guide policymakers and educators in their support of EAL students by describing EAL students' progress through the phases of English language development that are outlined in the national resource for EAL support, the EAL/D Learning Progression: Foundation to Year 10 (ACARA, 2015) (hereafter, the learning progression). The learning progression describes 4 phases of proficiency that have been shown to be 'a balanced and accurate reflection of English language development' (ACARA, 2015, p. iv) that teachers can use to make consistent judgements of English language proficiency (Centre for Education Statistics and Evaluation [CESE], 2015). These results were replicated when the tool was further validated in 2015 with a subsection of the EAL/D population in New South Wales public schools (McGrane et al., 2016).

The learning progression document (ACARA 2015) identifies 4 developmental phases of language proficiency, summarised in this section:

Beginning English[3]: Students in this phase may have age-appropriate understandings of print literacy in their first language or dialect which they can draw upon as they learn English. These students require high levels of explicit teaching, support with context and repeated exposures to language features. Students in the Beginning phase may have difficulty showing their understandings and should be provided with opportunities to demonstrate learning using their first language, through visuals or gestures, or other ways. Some Beginning phase students have little or no experience of literacy in any language and may require explicit instruction in things like left-to-right directionality, how print marks convey meaning, pen/pencil grip, letter–sound relationships and punctuation.

Emerging English: Students in this phase already speak one or more languages or dialects and have a growing degree of print literacy and oral language competency with English. Students may communicate verbally in familiar situations with common vocabulary and understand and participate in classroom behaviours and school routines. Generally, students in this phase will require explicit targeted language support and scaffolding in the classroom to develop an understanding of register, inference, sentence structure and subject-specific vocabulary.

Developing English: Students in this phase are further developing their knowledge of print literacy and oral English language competency. Students may communicate with greater fluency but still require support to produce extended pieces of spoken and written English, and to understand how audience and purpose inform language choices and text structures. Students in this phase require support to build subject-specific and technical vocabulary, to understand and use colloquialisms, idioms and imagery, to develop inferential understanding and write complex sentences.

Consolidating English: Students in this phase have a sound knowledge of spoken and written English, including a growing competency with academic language. These students may still require targeted support with the academic language and cultural demands of a task.

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3   In the EAL/D Learning Progression, the Beginning phase includes a subcategory, Limited Literacy Background, to describe the reading/viewing and writing behaviours typical of students with little or no experience of literacy in any language. In this research, Limited Literacy Background is included in the Beginning English phase.

Explicit instruction of abstract, technical and subject-specific language, as well as pre-teaching of assumed cultural knowledge and cultural conceptualisations will support students at the Consolidating phase to fully access learning and demonstrate success.

The project sought to map the time taken for EAL students to progress through these phases (hereafter, Beginning, Emerging, Developing and Consolidating)[4] and investigate factors that may impact students' learning progress. Such information can extend understandings of the process of learning English as an additional language, and can inform support so that EAL students receive targeted, systematic and explicit instruction based on their language needs and prior learning (ACARA, n.d.-a).

1.3 Research approach

Research into how long it takes to learn English is methodologically complex. As Creagh et al. (2019) point out, researchers must first define who is, and who is not, an EAL student, and then control for the complex range of factors that impact the rate at which students learn English. In addition, researchers must decide how to define and measure EAL students' English language skills, assess their progress and define what counts as achieving a skill level that enables EAL students to participate in curriculum learning.

Figure 4 shows the research approach to achieving the aim of the project and the connections between the project's aim, research questions and methods.

Figure 4: Research approach
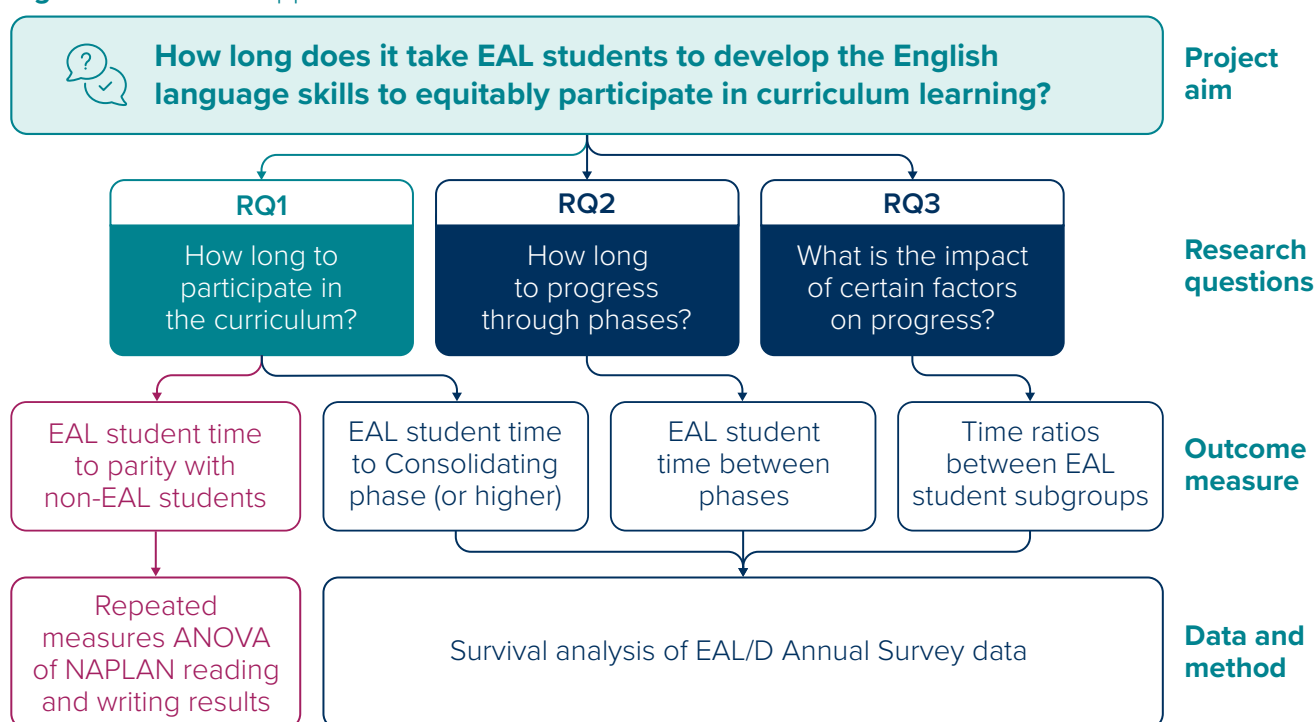
Note: Outcome measure and Data method for Analysis Part 1 are shown in the first 2 boxes. The remaining boxes show these for Part 2.

4   The research examined how long it takes students to reach the Consolidating phase (or language support no longer required) from various starting phases including from the Developing phase, but not how long students spend in the Consolidating phase. This is due to 2 reasons: 1) Our analysis shows students at the Consolidating phase level most likely have the language skills needed to equitably access the curriculum (see section 4), and 2) In the dataset, there is no way to accurately determine how long students stayed in the Consolidating phase. See section 3.5 Limitations of methods for further information.

The aim of this project has been achieved through contributing evidence to 3 research questions (RQ), along with 2 further sub-questions (SQ):

- **RQ1.** How long does it take EAL students to develop the English language skills to participate equitably in curriculum learning?
  - **SQ1.** How long does it take EAL students to reach parity of academic English skills with their English-speaking peers?
  - **SQ2.** How long does it take EAL students to reach the Consolidating phase (or language support no longer required)?[5]
- **RQ2.** What is the average time and typical range of time required by EAL learners to progress through the phases of English language development (Beginning, Developing, Emerging, Consolidating)?
- **RQ3.** What impact do factors, including starting year level, starting phase and demographic characteristics, have on students' language progress?

The research involved analysis of 2 sets of data – both of which were provided by NSW DoE.[6] These consisted of:

- 9 years of National Assessment Program – Literacy and Numeracy (NAPLAN) results in reading and writing for all students in New South Wales public schools (2014 to 2022) linked to students' enrolment records and their English language proficiency phases (if any) at the time they sat individual NAPLAN tests. NAPLAN is an annual Australian assessment for students in Years 3, 5, 7 and 9 which measures student learning progress in literacy and numeracy (ACARA, n.d.-b).
- 9 years of EAL students' English language proficiency phase data (2014 to 2022) based on teacher's judgements for all EAL learners from the NSW DoE's EAL/D Annual Survey. The EAL/D Annual Survey is completed mid-year by teachers in all New South Wales public schools and collects information about all EAL/D students including teachers' judgements of the English language proficiency phase of each student (CESE, 2021c).

Analyses of the 2 datasets were undertaken in 2 parts.

Part 1: NAPLAN results from matched EAL and non-EAL student groups were compared using repeated measures analysis of variance (ANOVA) to determine when EAL students reached parity with non-EAL students.

Part 2: Survival analysis was used to estimate the time taken for EAL students to progress to the Consolidating phase (or higher), the time taken to progress through the phases of language learning outlined in the learning progression (ACARA, 2015), and, within this larger model, the time ratios associated with being part of a subgroup of EAL students (e.g., EAL students with low socio-educational advantage or currently or previously on a refugee visa).

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5 The EAL/D Annual Survey is used by NSW DoE to collect information on students who require language support. When a student progresses out of the Consolidating phase, they are deemed to no longer need language support. Generally, students will progress from the Developing phase to the Consolidating phase, however, some students will be assessed as at the Developing phase in one calendar year and in the next, no longer requiring language support. For this reason, the research examined how long it takes EAL students to reach the Consolidating phase (or language support no longer required), a level abbreviated as 'Consolidating phase (or higher)' from here onwards.

6 The NAPLAN linked dataset was supplied by the NSW DoE under an information sharing agreement with NESA.

RQ1 has 2 sub-questions. This is because the point at which EAL students have the English language skills to equitably participate in curriculum learning is a latent construct – that is, a point that cannot be observed or measured directly. Instead, proxy or indirect measures must be used to answer this research question. In this project, the point at which EAL students achieve English outcomes that are comparable to their English-speaking peers (hereafter, non-EAL students) was used as a proxy for having the English skills to equitably participate in curriculum learning. To increase the rigor of the results, this proxy was measured in 2 ways.

The first method was to use NAPLAN results to measure when EAL students achieve comparable academic English scores (hereafter, parity[7]) with non-EAL students of similar demographic backgrounds (hereafter, matched non-EAL students).[8] NAPLAN assesses 4 learning areas: reading, numeracy, conventions of language, and writing. While NAPLAN does not specifically test academic English, and arguably tests only a narrow part of the curriculum, it does provide the closest available approximation. As other researchers have noted, large-scale standardised tests, particularly of students' progress in reading, provide the closest available proxy for assessment of students' development of academic English, and of educational progression (Creagh et al., 2019; Hakuta et al., 2000; Kieffer, 2008). Like other assessment tools, NAPLAN represents an imperfect proxy, but it is the best available fit for the purposes of this large-scale, longitudinal research.

The second method used to answer RQ1 was to measure the point at which EAL students were first identified as being at the Consolidating phase on the learning progression (or higher). The Consolidating phase was identified from Part 1 of our analysis as the phase at which EAL students have comparable academic English language skills to non-EAL students (shown in section 4.4 Summary of Part 1 analysis results).

No measure of student learning is perfect. The strength of the approach used in this research was the use of 2 different outcome measures and 2 different datasets. Each method independently contributes information to help understand the point in time that EAL students have the English skills to equitably participate in curriculum learning and validates the results of the other. Through this dual method approach, this research contributes robust information about how long it takes to learn English as an additional language in New South Wales public schools.

The following section further explores the unique contribution that this project makes.

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7   Parity is defined as the state or condition of being equal (Merriam-Webster, n.d.). In this project, parity means achieving equal scores on NAPLAN Reading and Writing tests.

8   A limitation of using reading and writing scores as a proxy for academic is that academic English also includes speaking and listening skills and assessments of these skills are not captured by NAPLAN. (See section 3.5 Limitations of methods, for a discussion of the limitations of this approach).

1.4 Project contribution

Outcomes from the project contribute to the education of EAL students in New South Wales and, potentially, in other Australian states and territories, in a number of ways.

The project complements and extends international and Australian research by providing evidence of the length of time it takes EAL students in Australia to develop the level of English required for equitable participation in learning the curriculum. Specifically, it builds on the Queensland-based research of Creagh et al. (2019) by investigating the learning of over 110,000 EAL students who attended school in New South Wales over nearly a decade. In addition to Creagh and colleagues' research, this project included analysis of students' NAPLAN results in writing as well as reading, and analysis of the relationship between students' starting phase of English and their subsequent achievement in reading and writing.

The research adds to understanding of how long it takes students who enter school at different phases of English (Beginning, Emerging, Developing) to reach the Consolidating phase or no longer require language support. Much previous international research has focused primarily on how long it takes from beginner levels, so this research supports teaching and learning and policy decisions where students enter schooling with some or even quite developed English language skills.

Furthermore, the project contributes new knowledge regarding the rate of progress of students through the phases of English language development as outlined in EAL/D Learning Progression: Foundation to Year 10 (ACARA, 2015). Knowledge of the rate at which students can be expected to progress from one phase to the next can assist teachers, schools and systems in understanding EAL students' educational progression, and to plan and implement appropriate support programs for them.

Overall, the project contributes to an evidence base that can inform:

- understandings of EAL students and of the challenges involved in learning an additional language
- design, implementation and evaluation of EAL support programs
- identification of high-EAL growth schools and effective school practices adopted therein that enhance EAL student learning progress
- professional development programs for EAL and mainstream teachers.

1.5 Structure of this report

Section 2 of this report provides the background to this research, summarising the literature about the importance of English language skills for schooling, how long it takes EAL students to learn English as an additional language, and factors known to impact learning English as an additional language. The background section also discusses the support for EAL students provided by NSW DoE – the system from which these datasets were drawn.

Section 3 of the report describes the methods including the data sources and the details of the 2 parts of the analysis. Sections 4 and 5 present the results from Part 1 and 2 analyses, respectively. Section 6 draws together key results from the research and considers their implications in the context of the study and of previous findings from relevant literature.

2. Background and literature review

Existing research has consistently highlighted the relationship between proficiency in English and academic achievement, and the complexity in understanding and assessing language proficiency. Research has also highlighted the significance of educational policy that prioritises access and equity for EAL students; and the provision of programs that support EAL students for the time required to develop language proficiency.

These issues provide the background to the project and are addressed here in 4 areas:

- the importance of English language for school success
- how long it takes EAL students to learn English
- factors that may impact learning English as an additional language
- support for EAL students in NSW DoE schools.

2.1 The importance of English language for school success

Questions about the nature of academic language are central to research into the question of how long students need to learn English, and to an understanding of what is involved in learning an additional language. A key issue is the nature of conversational and academic English and the ways in which they overlap and differ.

Cummins was one of the first researchers to highlight the significance of this relationship (Cummins, 1981b, 2000, 2008). His early research drew on the work of Skutnabb-Kangas and Toukamaa (1976), who had noted differences between the development of initial fluency and verbal academic performance in young Finnish children learning Swedish, and he built on this work to introduce the distinction between basic interpersonal communicative skills (BICS) and cognitive academic language proficiency (CALP). As he explains:

> BICS refers to conversational fluency in a language, while CALP refers to students' ability to understand and express, in both oral and written modes, concepts and ideas that are relevant to success at school (Cummins, 2008, p. 71).

The concepts of BICS and CALP have been much debated and further theorised over the years. Cummins himself argues that the terms represent no more than a useful conceptual distinction (Cummins, 2008). Despite ongoing debate, the terms BICS and CALP continue to be widely used, primarily because they resonate with so many teachers' observations and experiences with their EAL students. The concepts highlight a distinction that helps teachers understand why their EAL students are able, relatively quickly, to become conversationally fluent in English, but take so long to develop the level of academic language proficiency needed as they progress through school.

In the Australian context, the BICS/CALP distinction between everyday conversational English and academic English is widely acknowledged and familiar to many. The terms have provided a constructive way into a more detailed focus on the specialised genres, grammatical features and vocabulary that characterise different registers of conversational and academic English (e.g., Gibbons, 1991, 2009, 2015; Hammond & Miller, 2015). As Gibbons (1991), explained, 'playground language' typically occurs in face-to-face situations and is highly supported by the physical and visual context in which it occurs.

In contrast, 'classroom language' requires language suitable for conveying higher-order thinking skills such as hypothesising, evaluating, generalising, predicting and classifying – that is, language functions associated with educational learning and the development of cognition. Like Gibbons, a number of other Australian researchers have drawn on the distinction between spoken and written language and the concept of mode continuum to further elaborate on this issue (Christie & Derewianka, 2008; Hammond, 2023; Harper & Feez, 2020). They argue that the development of academic classroom language requires students to develop control of the different registers of subject-specific ways of talking about educational concepts and to develop understandings of written genres with their distinctive rhetorical structures and grammatical patterns. They also point out that as students progress through school, they are required to engage with language and concepts that are increasingly abstract and metaphorical, and thus, the distinction between BICS and CALP increases as students move through primary and into secondary school.

Different theoretical perspectives have led researchers to frame the relationship between academic language development and educational achievement somewhat differently. Collier and Thomas (2017), for example, have consistently distinguished between language proficiency and academic attainment. As they explain, their focus has always been on how long it takes EAL students to achieve educational equity, rather than how long it takes them to learn a second or subsequent language. Others have more strongly emphasised the intricate nature of the relationship between language proficiency and educational achievement and have argued that control of relevant aspects of academic language is necessary to enable EAL (and other) students to develop in-depth understandings of key curriculum concepts (e.g., Hammond, 2023; Hammond & Miller, 2015; Harper & Feez, 2020). As Lemke (1990) argued many years ago, if students are not able to talk (or read and write) science, then they are not able to do science. It is for this reason that understanding how long it takes EAL students to acquire the academic English skills needed to equitably participate in learning the curriculum is important.

2.2 How long it takes EAL students to learn English

Learning an additional language is complex and takes a long time. Hakuta et al. (2000, p. 14) pointed to the 'daunting task' facing EAL students, who not only have to develop control of academic English but also have to 'keep pace with native English speakers, who continue to develop their language skills'. Considerable research into the question of how long it takes EAL students to become proficient in English has been undertaken internationally. Based mostly on research from North America, estimates vary when it comes to the amount of time required for students to develop academic English. However, the estimated amount of time is largely quoted as a range of about 5 to 7 years.

Cummins (1981b, 1981a, 1984) was one of the first to highlight the length of time required to develop academic language proficiency, and his work has been among the most influential and quoted. Based on outcomes from early research that tracked the second language development of over 1000 Canadian students from Kindergarten to Year 9, he concluded that although students were typically conversationally fluent after approximately 2 years, they required an average of 5 to 7 years of schooling to develop the necessary control of academic English that would enable them to reach academic English parity with their English-speaking peers.

In a substantial body of work that spans more than 30 years, Collier and Thomas have consistently reached similar conclusions (Collier, 1987, 1992; Collier & Thomas, 1989, 2017). Their initial research (Collier, 1987) was undertaken with a group of 1,584 advantaged students – that is, students from families with strong educational backgrounds and aspirations who could be expected to do well at school. Findings from the research showed that advantaged students required a minimum of 5 to 7 years to achieve parity with their peers. Their extensive subsequent research with broad subgroups of EAL students has confirmed and elaborated these initial findings. They have consistently argued that it takes an average of 6 years for students who start kindergarten and receive quality bilingual education to become proficient in English, but 7 to 10 years or more, for students who have not had access to bilingual education. They have also concluded that some students may never become proficient in academic English.

Other North American researchers have reached similar conclusions. For example, in a comprehensive review of data from 4 different school districts in the United States and Canada, Hakuta et al. (2000) concluded that even in school districts that were recognised as successful in supporting their EAL students' language development, students required a minimum of 4 to 7 years to become proficient in academic English. In an investigation of students' reading progression across primary schools, Kieffer (2008) found that students who began school in America with limited English faced considerable difficulty in achieving parity with their peers. Kieffer concluded that it took years for these students to catch up and that some never managed to do so.

In related research in the United Kingdom, Demie (2013) investigated the length of time required for secondary school EAL students in a London local area to become fully proficient in English. Drawing on longitudinal assessment data, he found that even when students had access to highly effective teaching programs, they required an average of 5 to 7 years to acquire the level of academic language proficiency necessary for full participation in the school curriculum. Also in the United Kingdom, Strand and Lindorff (2020) found that the majority of students starting their first year of school with beginning levels of English took more than 6 years to be rated as Competent/Fluent.

In the only comparable Australian research, Creagh et al. (2019) utilised longitudinal data from a sample of EAL students in Queensland (n= 1872) to investigate how long they took to reach academic levels comparable to their English-speaking peers. Their analysis involved comparing the performance of 3 age groups of EAL students on the Australian NAPLAN Reading test to a matched sample of English-speaking students. This enabled them to track students based on their age of arrival into the Australian education system. Like previous researchers from North America and the United Kingdom, they concluded that learning English as an additional language takes years – a minimum of 2 to 4 years for the fastest group and 6 or more years for others. They also found that students' age on arrival at school was a factor in the time they took to learn English. Their middle group of students (ages 7 to 10) were the fastest (2 to 4 years to achieve parity). The youngest group (ages 5 to 8) was slower (4 to 7 years to achieve parity) and the oldest group (ages 9 to 12) was the slowest and did not achieve parity by the final data point.

While numerous studies have investigated how long it takes to reach proficiency in English, few have addressed the time taken to progress between stages of English language learning. Of these, in United Kingdom-based research, Demie (2013) found that the speed of English language learning towards being classified as fluent varied for secondary school students between stages, but on average took 1.5 years at Stage 1 (Beginner); 2 years at Stage 2 and 3 years at Stage 3. Strand and Lindorff (2020),

using a different scale, found that 98% of students who began learning English when they entered school in Reception had transitioned from Level A (New to English) to Level B (Early Acquisition) by the end of primary school (6 years), 78% had transitioned to Level C (Developing Competence), and only 31% had transitioned to Level D (Competent or above).

With similarities between the United Kingdom and Australian education systems in approaches to supporting EAL students, outcomes from these studies based in the United Kingdom hold relevance to the Australian context. Currently, however, there is little evidence of the time required by EAL students in Australian schools to progress through the phases of English language development, nor is there evidence of the impact of students' level of English at enrolment on their rate of language development. Outcomes from this project will begin to address these gaps.

2.3 Individual factors that may impact learning English as an additional language

The time required for EAL students to learn English varies significantly from student to student. Multiple factors are likely to impact students' additional language development, and the length of time they take. Factors include the age of students when they enter school in Australia, their pathways to immigration and settlement, including any prior experience of trauma, the nature and extent of their prior schooling, their level of first language literacy, their prior access to English, and their families' SES and educational background. In addition, students' levels of wellbeing, their sense of belonging, identity, and motivation, and their individual academic abilities are all likely to impact the length of time needed for EAL students to develop sufficient levels of English language proficiency.

Researchers have long acknowledged the potential impact of this range of factors on students' language development. While some have simply controlled for these factors in the design of their research, others have focused more specifically on their impact. Two factors have received particular attention: the age students begin learning an additional language and the level of students' socio-economic advantage.

The optimal age for students to begin learning an additional language has been a consistent focus of much previous research. A common assumption within the broader community, and indeed within the educational community, is that the earlier a student begins learning an additional language, the better; however, the research evidence here is mixed. Outcomes from Cummins' early research (1981a, 1981b) indicated that in Canadian schools, slightly older students achieved academic parity faster than students who entered school at a younger age. Similar findings regarding optimal age have been reported by other researchers (Collier & Thomas, 1989; Demie, 2013; Hakuta et al., 2000). In the Australian context, Creagh et al. (2019) also found 7 to 10 year olds reached parity faster than younger students (5 to 8 year olds). Their research thus endorsed findings that students starting to learn a second language at a younger age take longer to reach academic parity with their peers. Not all researchers, however, have reached similar conclusions. Strand and Lindorff (2020) found that the age EAL students began school in the United Kingdom was not a factor in the time taken to transition from 'new to English' to subsequent levels. They concluded that they expected older students to make the same progress in learning English and at the same rate as those joining in the Reception year of schooling.

A number of explanations have been proposed as to why slightly older students might be at an advantage when learning an additional language. Researchers generally agree that students who begin formal education and develop initial academic skills and concepts (including literacy development) in their first language can transfer that knowledge to education in their second or subsequent language. These students are, therefore, at an advantage in comparison to younger students with no prior experience of education (Collier, 1992; Collier & Thomas, 2017; Cummins, 1981b; Hakuta et al., 2000). Creagh et al. (2019, p. 153) suggest that there are likely a number of factors at work here, and they draw on Cummins' idea of an underlying cognitive proficiency that facilitates students' abilities to transfer learning from their experiences of school in the first language to acquisition of the second language. As indicated, however, findings regarding the significance of age are inconsistent.

The level of students' socio-educational advantage (SEA) has long been acknowledged as a factor that impacts the educational progression of all students, including EAL students (see, for example, ACARA, 2023). The significance of SEA has been reflected in outcomes from international assessment programs such as the Programme for International Student Assessment (PISA) and Progress in International Reading Literacy Skills (PIRLS), both of which have demonstrated that socio-economic status (SES) is a strong predictor of students' performance (De Bortoli et al., 2023; Hillman et al., 2023). Other research has also acknowledged the impact of students' SEA. While most studies focusing on progress in learning at school control for this factor in their research design, some have focused specifically on its impact (e.g., Flores et al., 2012; Hakuta et al., 2000), concluding that poverty and students' level of SEA are powerful predictors of rates of students' learning progression. However, in 2 studies, Strand and colleagues concluded that proficiency in English was the most powerful predictor of EAL students' achievement, over that of other factors (Strand & Hessel, 2018; Strand & Lindorff, 2020).

Finally, most researchers also point to the complex interplay between factors that impact students' learning (Collier & Thomas, 2017; Creagh, 2023; Creagh et al., 2019). These factors include refugee status and gender, as well as age and SEA. Given the mixed evidence regarding the impact of these factors on EAL students' learning, further investigation in the Australian context is needed to inform better understanding of EAL students' learning needs.

2.4 Support for EAL students in NSW Department of Education schools

This research was conducted with EAL students in New South Wales public schools. The students included in the project were recipients of the EAL/D programs and practices of New South Wales public schools they attended. It is, therefore, important to understand the context within which these students experienced their schooling and the supports provided to them. It is also important to note that EAL programs differ in varying ways from one Australian state and territory to another. Details of the practices and programs in New South Wales are, therefore, relevant to the research, and the findings need to be interpreted in the context of EAL support provided by NSW DoE.

NSW has one of the largest LBOTE student populations in Australia[9], with more than a third (39.3%) of students who attend public schools from a language background other than English (NSW DoE, 2024).

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9   In 2023, 31% of all Years 3, 5, 7 and 9 enrolments in New South Wales were LBOTE enrolments. Of the total LBOTE enrolments in Australia, New South Wales accounted for the largest share, with Years 3, 5, 7 and 9 LBOTE enrolments in New South Wales accounting for 35% of all Years 3, 5, 7 and 9 LBOTE enrolments across Australia. ACARA's 2023 national participation data for reading was used to calculate these figures.

Just under 1 in 4 New South Wales students are EAL/D students (CESE, 2021c). In 2022, there were approximately 200,000 EAL/D students in New South Wales public schools, with 11% at the Beginning phase of the Learning Progression, 21% at the Emerging phase, 35% at the Developing phase and 33% at the Consolidating phase.[10]

In New South Wales public schools, support for EAL students is available through a comprehensive program. This program is funded through an equity loading that takes into account students' levels of English proficiency, their length of time in Australian schools and their refugee status (CESE, 2021b). Each year the DoE collects information on the number of students needing English language and literacy support. This information is based on responses to the EAL/D Annual Survey that records (among other factors) numbers of EAL students, their length of time in Australia, details of EAL/D programs and their modes of delivery. The information also includes teachers' annual judgements of students' phases of English proficiency (Beginning, Emerging, Developing, Consolidating) using ACARA's EAL/D Learning Progression. Teachers' judgements are based on assessment of students' English proficiency in listening, speaking, reading and writing, with students' phase of English recorded as an overall judgement. Data from the annual survey and teachers' judgements are centrally recorded and are used to support resource allocation, to monitor students' progress in language proficiency and to provide specialist English language support in response to the needs of EAL students within schools (CESE, 2021c). Additional funding and resources are available to schools with students who are newly arrived or from refugee backgrounds (NSW DoE, 2020).

Support for EAL students in New South Wales public schools is provided through new arrival and ongoing EAL/D programs (NSW DoE, 2020). The New Arrivals Program provides students at Beginning and Emerging levels of English with initial intensive support for their language development and their cultural adjustment (NSW DoE, 2020). Newly arrived primary-school students enrol directly in primary school and receive support within the school through parallel intensive English classes and/or through support within their mainstream class. Newly arrived high school students in metropolitan Sydney or Wollongong enrol in one of 14 Intensive English Centres (IECs) or Intensive English High Schools (IEHS) that provide an intensive English and high school preparation program. Students may remain in an IEC from 2 to 5 terms depending on the student and their English language proficiency assessment. However, generally, students are considered ready to transition to high school when they have completed their IEC program and have been assessed as having the level of proficiency in English that will enable them to participate in high school programs. Newly arrived high school students in regional areas enrol directly into high school and receive intensive English support at the school.

Once EAL/D students move beyond initial levels of English development, they are supported by ongoing programs that typically involve specialist EAL/D and class teachers working together. These programs may include a combination of modes of instruction where EAL/D specialist teachers and class/subject teachers work collaboratively to embed EAL/D practices in mainstream programs. They may also include instructional teaching approaches where qualified EAL/D specialists support individual teachers or whole staff through demonstration teaching, coaching and mentoring. Resources provided by DoE stress the importance of EAL/D programs that are organised at a whole-school level and that involve the school principal, the executive staff, specialist EAL teachers and class teachers (NSW DoE, 2020).

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10   From the NSW DoE EAL/D Annual Survey dataset 2022 (see 3.1.2 for further information).

To assist in this work, NSW DoE proposes using the NSW DoE ESL Scales and ACARA's EAL/D Learning Progression to help identify EAL students' achievement, to understand the characteristics of students at each phase of English language development and to assist in relevant program planning and curriculum development (NSW DoE, 2020).

Key principles that inform approaches to EAL/D teaching and learning in New South Wales public schools are that language is learned through meaningful use in a variety of contexts, that building background knowledge about content and language specific to each subject area is important, that the provision of scaffolding – temporary assistance which is gradually withdrawn – leads to learning and that knowing the purpose for learning enhances students' understanding (NSW DoE, 2020). EAL/D education in New South Wales public schools emphasises responsive teaching – that is, teachers understanding learners' prior schooling, language proficiencies and other aspects to support their needs – as well as the importance of ongoing specialist support beyond intensive English provisions, together with utilising students' home language supports for learning English (NSW DoE, 2020).

These principles reflect theoretical and pedagogical developments that have taken place both internationally and in Australia over the past 30 or so years. They emphasise the need for 'content-based' and 'language across the curriculum' programs where support for students' language development is provided within the context of mainstream curriculum programs (Gibbons, 2015; Hammond, 2018, 2023; Walqui & van Lier, 2010). They also acknowledge arguments such as the following:

> We do not 'learn' language and then later 'use' it. Second language learners do not in any case have the time to study English as a 'subject' before they use it to learn other things, they must begin to use it as a medium for learning as soon as they enter school, simultaneously developing their second language hand-in-hand with curriculum knowledge (Gibbons, 2015, p. 25).

Evidence of the positive impact of such approaches in the New South Wales context has been documented in several projects. These include the Successful Language Learners Project (Australian Government Department of Education, Employment and Workplace Relations, 2011), EAL/D Effective Practices (CESE, 2021a) and Classrooms of Possibility project (Hammond, 2018). Despite this, there is evidence that ways in which best practice principles play out in individual regions, schools and classrooms and for individual students in New South Wales are uneven. Similarly, at a national level, there is evidence of the current low profile of EAL students as an equity group (ACTA, 2022). At a school level, moreover, there is evidence that some mainstream New South Wales teachers do not consider they have shared responsibility with EAL teachers for the language development of their EAL students and that they lack confidence in how to meet the needs of EAL students within their classes (Dobinson & Buchori, 2016; Hammond, 2014).

Research into the time taken for EAL students in New South Wales public schools to learn English as an additional language is, therefore, timely and relevant. Outcomes will have implications for policymakers, schools and teachers, and provide them with valuable information to continue to plan and refine the support available for EAL students.

The next section describes the methods of the research.

3. Methods

The Introduction of this report outlined the approach taken to achieving the project's aims.[11] This section describes the methods used in this project, including the:

- data sources
- methods of analysis across the 2 parts of the analysis
- limitations of the methods.

Table 1 provides an overview of the data sources and methods of analysis, which are explained in full in the following subsections.

Table 1: Overview of data sources and methods for both analysis parts

Data collection and analysis	Part 1 analysis	Part 2 analysis
Data sources	NAPLAN data 2014 to 2022, for both EAL and non-EAL students	EAL/D Annual Survey data 2014 to 2022, for EAL students only
Measures	Student-level scale score[12] on 2 NAPLAN domains – reading and writing	Teacher judgement of an overall phase for each student, based on student proficiency across 4 language modes in the national EAL/D Learning Progression: listening, speaking, reading/viewing and writing
Method	Propensity score matching and repeated measures ANOVA with tests for simple effects	Survival analysis using accelerated failure time (AFT) model
Analysis outcome	Time taken to achieve parity in NAPLAN reading and writing scores	Time to progress to Consolidating phase or higher; time to progress from one phase to the next; time ratios for subgroups

In short, in Part 1 of the analysis, NAPLAN results from matched EAL and non-EAL student groups were compared using repeated measures ANOVA to determine when EAL students reached parity with non-EAL students. Part 2 involved using survival analysis to estimate the time taken for EAL students to progress to the Consolidating phase (or higher), the time taken to progress through the phases of the Learning Progression, and the time ratios for subgroups of EAL students in progressing their English language learning.

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11 Macquarie University Human Research Ethics Committee confirmed that the project is exempt from ethical review due to its acceptable and approved secondary use of data and negligible risk to participants. The project meets the requirements set out in section 5.1.22 of the National Statement on Ethical Conduct in Human Research (2007 – Updated 2018).

12 For each test (e.g., Reading), NAPLAN scale scores from Years 3 to Year 9 are comparable because they are calibrated to be on the same scale through a complex horizontal-vertical equating process. For more information, refer to ACARA's NAPLAN technical report about how scale scores on NAPLAN scales prior to 2023 were estimated. Also note that, while NAPLAN scale scores for 2023 and beyond were not used in this research, they are not comparable to those prior to 2023, which were on different NAPLAN scales. For more information, see ACARA's NAPLAN website about the changes introduced to the measurement scales in 2023.

3.1 Data sources

The research utilised 3 sets of data provided by NSW DoE:

- NAPLAN linked to school enrolment and English proficiency phase data
- EAL/D Annual Survey data
- School mobility data.

A data release agreement signed between the Australian Education Research Organisation (AERO) and NSW DoE in August 2022 allowed AERO to receive the linked data from NSW DoE via CESE. Before sharing the data, CESE linked the NAPLAN data to students' enrolment records and their English language proficiency phases (if any) at the time when students sat the individual NAPLAN tests, and de-identified the linked data. These datasets were received in April 2023.

The following 3 sections describe the datasets and data preparation in detail.

3.1.1 Linked NAPLAN data

The first dataset used in this project contained NAPLAN results[13] from students in New South Wales public schools from 2014 to 2022 for the domains of reading, writing and numeracy. These data were linked to DoE school enrolment and English proficiency phase data and contained additional student-level and school-level information.

Additional data (gender and month and year of birth) were requested and received in September 2023 in 2 comma-separated values (CSV) data files.

The CSV files contained 51 pieces of information for every student who participated or did not participate in NAPLAN tests from 2014 to 2022, excluding 2020 due to the cancellation of NAPLAN because of COVID-19. There were nearly 2 million student records (1,953,944) across 9 calendar years. The variables for each student are listed in Appendix A.1.

3.1.2 EAL/D Annual Survey

The second dataset used in this project was the NSW DoE's EAL/D Annual Survey data from 2014 to 2022. The EAL/D Annual Survey is completed mid-year by all public schools in New South Wales. The survey collects information about students from a language background other than English and the English language support they require at school.

The EAL/D Annual Survey captures teachers' holistic judgements of each LBOTE student's overall English language proficiency using the EAL/D Learning Progression or an indication that language support is not required. Students' English language proficiency level is identified as being in one of the phases: Beginning, Emerging, Developing or Consolidating English. The phase judgements are made by teachers using the broad descriptors of each phase of English language learning while at the same time balancing considerations of the descriptors for each of the 4 language modes in the EAL/D Learning Progression: reading/reviewing, listening, speaking and writing. EAL/D students of any age may be in any of the language learning phases and move through them at differing rates.

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13 Scale scores based on weighted likelihood estimates (WLEs) were used for this project as plausible values were not available in the data.

The EAL/D Annual Survey 2014 to 2022 data were received in one CSV file from NSW DoE. The dataset contained 23 variables and over 2.5 million records (2,512,357) across 9 calendar years (see Appendix A.2 for the list of variables).

3.1.3 School mobility data

The third data source used in this research was the school mobility dataset from 2014 to 2022 provided by CESE. School mobility refers to the rate of student enrolment turnover in a school over a year.[14] Research shows that schools that experience significant turnover of students can face greater difficulties implementing effective practices and initiatives to support student learning (Rhodes, 2007). In this project, the school mobility dataset was used to obtain school-level information not included in the EAL/D Survey to further help contextualise the findings from this research. The school mobility dataset in this project contains 19,775 school records (about 2,200 school records per calendar year) across 9 calendar years and each record contains 7 pieces of information (see Appendix A.3). The dataset was received in one CSV file.

3.1.4 Data preparation

The CSV files from the 3 sources were converted to DTA files for use in the Stata statistical program (version 18). The EAL/D Annual Survey data was linked with the school mobility data and the NAPLAN data using the common school IDs shared across the 3 datasets. The purpose of linkage was to acquire additional school information, such as school mobility and school remoteness, which were not captured in the EAL/D Annual Survey data.

Each data preparation and analysis task was performed by a statistician and quality-assured by at least 2 analysts.

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14   CESE's report, Mobility of Students in NSW Government Schools, provides more information on school mobility.
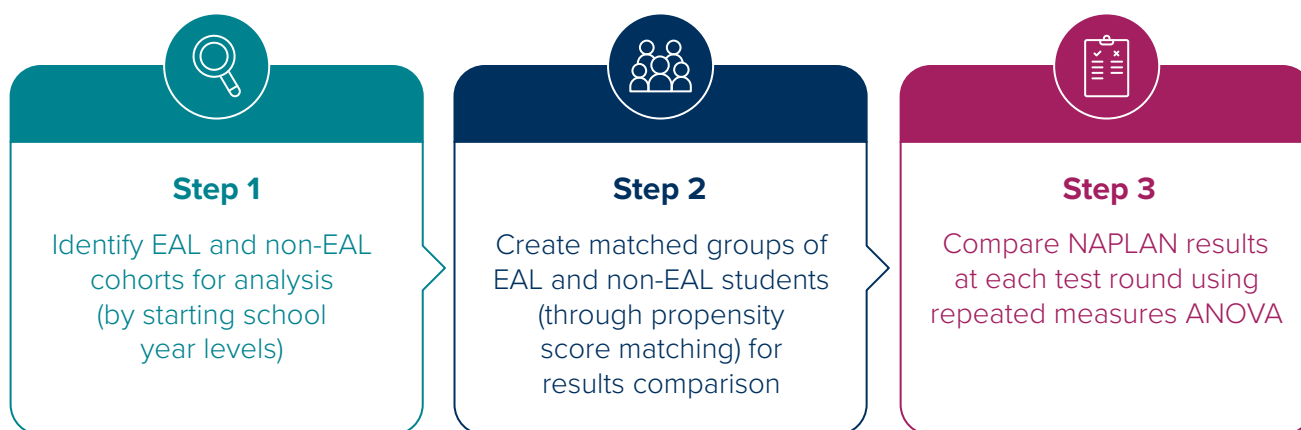
3.2 Part 1 analysis

Part 1 analysis addressed SQ1: How long does it take EAL students in New South Wales to achieve comparable academic English results to non-EAL students? This SQ was investigated by comparing the NAPLAN results of EAL and non-EAL student groups to see when parity in results was reached. The analysis was done for reading and writing separately and according to the starting English language learning phase of students.

This section describes the steps in the method for the Part 1 analysis, with Figure 5 depicting the 3 steps in this process.

Figure 5: Steps in Part 1 method

Step 1
Identify EAL and non-EAL cohorts for analysis (by starting school year levels)

Step 2
Create matched groups of EAL and non-EAL students (through propensity score matching) for results comparison

Step 3
Compare NAPLAN results at each test round using repeated measures ANOVA

3.2.1 Step 1: Identify EAL and non-EAL student cohorts for analysis

Part 1 analysis began with the NAPLAN results of every student in New South Wales public schools from 2014 to 2022 (n= 1,953,944). The first step of the method was the identification of EAL and non-EAL cohorts for analysis. To align with the methods of Creagh et al. (2019) and provide information about EAL students who commence schooling in Australia at different ages, step 1 involved creating 3 cohorts based on when students commenced schooling in Australia.

In the linked NAPLAN dataset, the best way to identify when students commenced school was the time they first sat a NAPLAN test. Three cohorts of EAL and non-EAL students were created based on when they sat their first NAPLAN test in New South Wales:

- **Cohort 1** commenced school prior to the Year 3 NAPLAN test (1 May,[15] Year 3).
- **Cohort 2** commenced school after the Year 3 NAPLAN test and prior to the Year 5 NAPLAN test (1 May, Year 5).
- **Cohort 3** commenced school after the Year 5 NAPLAN test and prior to the Year 7 NAPLAN test (1 May, Year 7).[16]

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15   Prior to 2023, NAPLAN tests were conducted in early May.
16   NAPLAN data can indicate students enrolling between Year 7 and 9, however, this group only sit one NAPLAN test (Year 9) and one NAPLAN datapoint was not considered sufficient for the analysis.

Data cleaning occurred at this point and students meeting the following criteria were excluded:[17]

- students whose first NAPLAN test in a New South Wales public school was not their first NAPLAN test in Australia. Some students included at this point may have commenced school in a non-government school or in another state or territory prior to enrolling in a New South Wales public school. To ensure that the results of the analysis accurately reflect the amount of schooling students received, only students who completed all their NAPLAN tests within New South Wales public schools were included in Part 1 analysis. The 'years enrolled to test' variable[18] was used to identify and exclude any student who had been enrolled in school for a period of time which would have included a NAPLAN testing round.

- students who did not remain enrolled in a New South Wales public school until Year 9 – for example, they may have moved interstate/overseas or to a non-government school

- First Nations students (see 1.1 Context, for reasons why First Nations EAL/D students were not included in this research)

- students who repeated a year as this would complicate the analysis as to years of schooling

- students who did not have NAPLAN results for every NAPLAN testing round that was held while they were enrolled in New South Wales public schools. Table 2 shows the NAPLAN tests that students could possibly have taken during their enrolment in New South Wales public schools. Students who had missed a testing year were excluded from the sample.[19]

Table 2: First NAPLAN test and NAPLAN test years by cohort

Analysis cohort	First NAPLAN test	Calendar year of NAPLAN tests (Year level)
Cohort 1	Year 3	2015 (Year 3), 2017 (Year 5), 2019 (Year 7), 2021 (Year 9)
Cohort 2	Year 5	2014 (Year 5), 2016 (Year 7), 2018 (Year 9) 2015 (Year 5), 2017 (Year 7), 2019 (Year 9) 2017 (Year 5), 2019 (Year 7), 2021 (Year 9)
Cohort 3	Year 7	2014 (Year 7), 2016 (Year 9) 2015 (Year 7), 2017 (Year 9) 2016 (Year 7), 2018 (Year 9) 2017 (Year 7), 2019 (Year 9) 2019 (Year 7), 2021 (Year 9)

17   After these rules were applied, 91% of all students in the NAPLAN data file were excluded. There are 2 main reasons for the exclusions: 1) For Cohort 1, most of the students excluded were those who did not have 4 complete and non-missing NAPLAN results (WLE) (e.g., all Year 3 students enrolled in 2017 to 2022). 2) For cohorts 2 and 3, most students were excluded as they had enrolled in Australian schools for more than 2 years. In other words, they were excluded due to the design of the study.

18   This variable was provided by NSW DoE and included in the linked NAPLAN data. It was calculated as the difference in years between a student's first enrolment date in an Australian school (as captured from the school enrolment forms) and 1 May of the NAPLAN testing year.

19   Non-missing NAPLAN results refers to non-missing WLE estimates. Students who were absent on the test day or withdrawn or exempted from the tests have missing WLE estimates.

The next part of this step was to divide the EAL students in each of the 3 analysis cohorts further based on their English language proficiency when they sat their first NAPLAN test in a New South Wales public school. In the linked NAPLAN dataset, the closest variable to student proficiency upon enrolment was students' phase on the learning progression in their first NAPLAN test year: Beginning, Emerging, Developing and Consolidating. This further division of EAL students allows for more detailed information for teachers, schools and systems about English learning progress from different phases.

Table 3 contains the numbers in each cohort by phase at the end of step 1 of the analysis.

Table 3: Number in each analysis cohort by EAL/D Learning Progression phase after step 1 (prior to matching)

Analysis cohort	Non-EAL	Beginning	Emerging	Developing	Consolidating
1	22,827	74	1,950	5,737	2,509
2	1,410	156	594	707	261
3	5,027	274	969	785	441

In all analysis cohorts, the numbers of Beginning students are relatively small because newly arrived students with limited English proficiency levels are likely to have been exempted from their first NAPLAN tests.[20]

3.2.2 Step 2: Create matched groups of EAL and non-EAL students

Step 2 involved creating samples of EAL and non-EAL students similar or matched in demographic characteristics in preparation for comparing their NAPLAN results. It is widely acknowledged that in Australia, demographic characteristics of students, such as their socio-educational advantage status and geolocation, are associated with student learning and performance (Goss & Sonnemann, 2016). If any of the EAL cohorts in this project had characteristics associated with lower NAPLAN performance in larger proportions than non-EAL students, the results could be confounded by the impact of those factors, rather than being purely reflective of English language learning progress. To remove the impact of confounding factors on the results in this project, propensity score matching was used.

Phase subgroups that had fewer than 500 students were combined with the adjacent phase subgroup to form a larger group. Specifically, Beginning and Emerging students were combined into one group (Beginning/Emerging), and in Cohorts 2 and 3, Developing and Consolidating students were combined. The reason for this is that propensity score matching requires a reasonable number of EAL students to have enough statistical power to ensure the estimated difference between the matched EAL and non-EAL group is accurate and precise (Caliendo & Kopeinig, 2008).

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20 Students with a language background other than English who arrived from overseas and have been attending school for less than a year before the NAPLAN test may be exempted. However, these students are not automatically exempt and are given the opportunity to participate in testing. Students may be exempt from one test (e.g., Reading) but still be able to participate in another test (e.g., Numeracy).

These 7 phase subgroups were then matched using one-to-one nearest neighbour matching without replacement, to non-EAL students enrolled in the same time window and with the same cohort definition. Specifically, each EAL student was matched with a non-EAL student, based on their:

- gender
- SEA[21]
- age at the earliest NAPLAN test[22]
- years enrolled to earliest NAPLAN test[23]
- school remoteness.

After matching, 2 groups of EAL and non-EAL students with equal size (for each phase and cohort combination) were formed. Approximately 5,967 EAL students (41%) were excluded from the sample at this step as a result of not being able to find a match that satisfied the criteria. More details about the matching technique can be found in Appendix B.

Of note is that refugee status was not included as a matching variable because none of the non-EAL students had a refugee background. Therefore, students with refugee status, comprising roughly 1.2% of the population of New South Wales public school students, were excluded from Part 1 analysis in this step. However, refugee students are included in Part 2 analysis. 5.2 Subgroup analysis presents the Part 2 results for students with refugee backgrounds.

Table 4 provides the numbers of students in each phase subgroup after matching.

Table 4: Number of non-EAL and EAL students in each phase subgroup after matching

Analysis cohort	Non-EAL	Beginning/ Emerging	Developing	Consolidating
1	5,906	957	3,218	1,731
2	1,155	545	610	
3	1,429	538	891	

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21 SEA scores were provided by NSW DoE in the data files received for this project. SEA scores are generated by CESE annually using information such as parental education and parental occupation, using a method similar to that used for the SEA scores generated by ACARA for national reporting. For more information about the generation method, see ACARA's technical report. The propensity score matching process used SEA as a continuous variable for matching.

22 Age at Year 3 NAPLAN for Analysis Cohort 1, age at Year 5 NAPLAN for Analysis Cohort 2 and age at Year 7 NAPLAN for Analysis Cohort 3.

23 Years enrolled to Year 3 NAPLAN test for Analysis Cohort 1, years enrolled to Year 5 NAPLAN test for Analysis Cohort 2 and years enrolled to Year 7 NAPLAN test for Analysis Cohort 3. Years enrolled to a NAPLAN test are calculated as the differences between a student's first enrolment date in an Australian school (as captured from the school enrolment forms) and the NAPLAN test date.

Student characteristics before and after matching are detailed in Appendix C. An example of the resulting pairs of matched groups obtained after applying the matching procedure is shown here in Table 5 where the statistics pertaining to demographic characteristics between the Developing EAL and Non-EAL matched groups from Cohort 1 are seen to be very close to one another. This pattern of close concordance between matched groups was found across all pairs of matched groups, indicating that matching procedures worked as designed to create comparable groups.

Table 5: Characteristics of Cohort 1 matched Developing EAL and non-EAL students in percentages

Variables	Category	Developing (n=3,218)	Non-EAL (n=3,218)
Student-level characteristics (%)			
Gender	Male	50.37	50.47
	Female	49.63	49.53
Student SEA	Mean	8.74	8.69
	Standard deviation (SD)	2.46	2.46
Age at Year 3 NAPLAN	Mean	8.45	8.44
	SD	0.30	0.30
Years enrolled to Year 3 NAPLAN test	Mean	3.24	3.25
	SD	0.25	0.21
School-level (%)			
School remoteness	Major Cities of Australia	98.57	98.51
	Inner Regional	1.06	1.15
	Outer Regional Australia	0.37	0.34
	Remote Australia	0	0
	Very Remote Australia	0	0

Appendix C also contains information about demographic characteristics of all EAL groups drawn from the 3 cohorts and how they compare to the characteristics of the EAL subgroups that were used in the final matched groups for analysis. This shows broad agreement in statistics between the EAL groups and the overall population groups from which they were drawn.

While the matching procedure worked as expected to create groups that were matched on the demographic variables, several features of these matched sample groups should be noted. Firstly, overall, the students included in Part 1 of the research had slightly higher SEA than the underlying population group and slightly different lengths of time from enrolment to first NAPLAN test than the population. The implication of these remaining differences is that findings for Part 1 may underestimate the time to achieve parity.

Secondly, it should be noted that the demographic profiles of the 3 cohorts (based on starting year) were not identical, implying that comparisons from one cohort to another may not be valid. This may limit our ability to draw inferences about the impact of starting age and year level on progress. However, this limitation is addressed with results from our Part 2 analysis where a different statistical procedure is used on larger samples that control for demographic factors simultaneously.

Table 6 presents the age and starting year level of the EAL students in each cohort in Part 1 after matching.

Table 6: Details of EAL students in matched cohorts in Part 1

Analysis cohort	Year first enrolled	Median age at first NAPLAN test
Cohort 1	Prior to the Year 3 NAPLAN test (1 May, Year 3)	8.5
Cohort 2	After the Year 3 NAPLAN test and prior to the Year 5 NAPLAN test (1 May, Year 5)	10.6
Cohort 3	After the Year 5 NAPLAN test and prior to the Year 7 NAPLAN test (1 May, Year 7)	12.6

3.2.3 Step 3: Compare NAPLAN results using repeated measures ANOVA

In step 3, the NAPLAN performance of matched student groups was compared at each relevant NAPLAN test round (Years 3, 5, 7 and 9) using repeated measures ANOVA. The advantage of using repeated measures ANOVA is that it accounts for the correlation within and between EAL and non-EAL groups at multiple time points (NAPLAN tests).
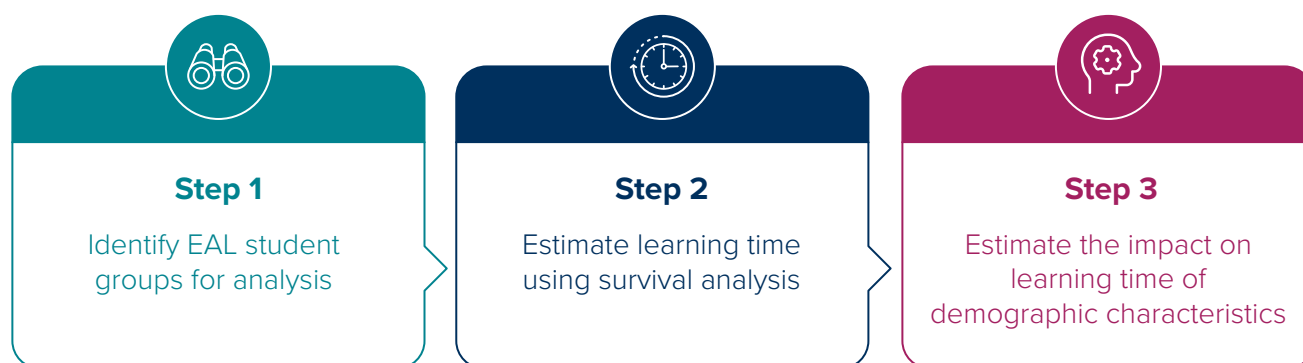
Whether any of the differences seen in results were statistically significant was determined through performance of statistical tests on the contrast between EAL and non-EAL matched groups in each NAPLAN test round (Years 3, 5, 7 and 9). At each NAPLAN test round, a significance test[24] was conducted to see whether the difference in the performance between the matched EAL and non-EAL groups was statistically significant at a 5% significance level. The test statistic (z score) and the p-value under the test are reported in <u>section 4. Results from Part 1 analysis</u>.

3.3 Part 2 analysis

Part 2 analysis answered RQ2 (What is the average time and typical range of time required by EAL learners to progress through the phases of English language development?) and RQ3 (What impact do factors, including starting year level, starting phase and demographic characteristics, have on students' language progress?). Part 2 analysis also addressed SQ2 and contributed insights into how long it takes for EAL students to reach the Consolidating phase (or higher) – a proxy measure for having the language skills to equitably participate in curriculum learning (RQ1).

<u>Figure 6</u> depicts the 3 steps involved in Part 2 analysis.

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24   The significance test is known as the Wald test, which is essentially a chi-squared test with one degree of freedom (df). This Wald test produces the same inference as a z-test because a chi-squared distribution with one df is equivalent to the distribution of a squared standard normal (z).

Figure 6: Steps in Part 2 method

| **Step 1** | **Step 2** | **Step 3** |
| Identify EAL student groups for analysis | Estimate learning time using survival analysis | Estimate the impact on learning time of demographic characteristics |

3.3.1 Step 1: Identify EAL student groups for analysis

Part 2 analysis used the EAL/D Annual Survey data to estimate the time taken by EAL students in different phases to progress to the next phase or to the Consolidating phase (or higher). The analysis disaggregated learning progress by the year level students commenced schooling in Australia, in a different way to Part 1. Part 1 analysis was constrained by the data points being NAPLAN years (Years 3, 5, 7 and 9 only), however, the EAL/D Annual Survey contains annual data points (each year level from Kindergarten to Year 12) and allowed for different student groupings. Four groups of EAL students were classified based on the year level they started school in Australia: Kindergarten, Year 1 and 2, Years 3 to 6 and Years 7 to 9, to align with the stages of schooling in the EAL/D Learning Progression.

Five selection criteria were applied to the groups of starters to ensure the results would accurately address the research questions. Students with the following criteria were included in the analysis:

- first enrolled in Australian schools prior to the EAL/D Annual Survey occurring mid-year of the starting year level
- were assessed in the EAL/D Annual Survey in mid-year for at least 4 calendar years from their starting year level[25]
- were non-First Nations students
- had not attended a school for special purposes or support class in a mainstream school.

After the eligible students were identified, further data cleaning procedures were performed through consultations with the Multicultural Team in NSW DoE to exclude a small number of student records for reasons largely relating to the appearance of erratic progression through phases, which may have been the result of variability in teacher judgements.[26]

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25   Four data points were required to ensure that there were sufficient time points for assessing students' progress to the Consolidating phase (or higher) and the minimum required for adequate statistical power to perform the survival analysis.

26   We excluded 81% of students based on the selection criteria, described up to this point in Section 3.3.1. Two main reasons for the exclusion: 1) the EAL/D survey data file starts from 2014, and a large proportion of students who enrolled in New South Wales public school prior to 2014 had no prior information on their progression of English language since they first enrolled, so we could not estimate the total number of years they took to reach a proficiency level; 2) students were excluded (due to the design of this longitudinal study) if they did not have at least 4 English language proficiency phase assessments over their schooling.

Table 7 shows the number of EAL starters from each group included in Part 2 analysis after data cleaning. Part 2 analysis was able to include more EAL students than Part 1 analysis as Part 1 analysis excluded unmatched students and those with missing NAPLAN data. Of note is that EAL students starting school in Kindergarten make up a large proportion (88.7%) of students included in this part of the research.

Table 7: Number of EAL students in each analysis group used in Part 2 analysis

Group	Beginning phase	Emerging phase	Developing phase
Kindergarten starters	52,154	34,639	11,736
Years 1 to 2 starters	2,415	1,402	606
Years 3 to 6 starters	2,447	1,598	1,233
Years 7 to 9 starters	1,964	505	436
Subtotal	58,980	38,144	14,011

Student characteristics by starting year level of the students included in Part 2 analysis are detailed in Appendix D. The demographic characteristics of students in each starting group are slightly different but a pattern can be observed. Largely, students in Beginning phase in each starter group were more likely to currently or previously be on a refugee visa and/or be newly arrived in Australia and/or have low SEA than students in the other phases.

Table 8 presents the age and starting year level of the students in each group.

Table 8: Details of each group of starters by starting year level(s)

Group	Starting year level	Median age when first enrolled in an Australian school (5th to 95th percentile)
Kindergarten starters	Kindergarten prior to 30 June	5.2 years (4.6 to 5.8)
Years 1 to 2 starters	Year 1 or Year 2 prior to 30 June	6.7 years (5.8 to 7.9)
Years 3 to 6 starters	Years 3, 4, 5 or 6 prior to 30 June	9.5 years (7.9 to 11.8)
Years 7 to 9 starters	Years 7, 8 and 9 prior to 30 June	13.4 years (11.7 to 15.4)

3.3.2 Step 2: Estimate learning time using survival analysis

Survival analysis was chosen as the statistical approach to use in this project as it is commonly used to analyse the time taken for 'an event of interest' to occur. For RQ2, the events of interest are progress from one phase to the next or higher.[27] 'Event of interest' includes reaching the next phase or higher, rather than the next phase because some students progressed quickly, and skipped a phase in a calendar year (e.g., moving from Beginning to Developing in a year). As such, the time for EAL students to progress from one phase to the next phase, as reported in section 5.1.2 for RQ2, is somewhat conservative.

The same survival analysis approach was also used to answer SQ2. Part 1 analysis (which was conducted before Part 2 analysis) showed that Consolidating phase students, on average, consistently performed on par or better in both reading and writing than non-EAL students. For this reason, the Consolidating phase was chosen as the point in time that EAL students are likely to have adequate English language proficiency to equitably participate in curriculum learning.[28] The survival analysis provides an estimate of how long it takes students to progress to the Consolidating phase (or higher).

The survival modelling approach, which utilised an accelerated failure time (AFT) model, was also used to investigate the impact of different factors on the time to progress (RQ3) as it allows for the analysis of the time taken for different groups of EAL starters to progress to each subsequent phase or higher. Details of this model are given in Appendix E. The AFT model was used to estimate for **typical students (students with average demographic profiles)**[29] in each starter group commencing at a particular starting phase, the:

- time for half of the **typical** students to progress to Consolidating or each subsequent phase or higher (also known as the median time)
- year level when half of the students progressed to Consolidating phase or higher based on the median time
- proportion of students reaching Consolidating or each subsequent phase or higher at regular time points (e.g., 1 year, 2 years and 3 years).[30]

27   Some EAL students progressed from one phase to the next phase, regressed to a lower phase and then progressed again. This is often observed in 'time to event' data and is referred as multiple events per subject. However, this analysis only investigated the time for students at one phase to progress to the next phase or higher the first time, meaning that the single-event data was generated and analysed.

28   While Part 1 analysis showed that, on average, students at the Consolidating phase performed on par or better in both reading and writing than non-EAL students, this does not mean that these students do not need continued support to keep developing their language skills to the point where they can fully access the curriculum to reach their full potential. See section 6.1 for further discussion.

29   A typical student has the average characteristics of all the students in each starter group. Depending on the demographics and characteristics of each starter group, the profile of a typical student varies across starter groups and across starting phases.

30   See additional results for more information.

Students were tracked until they were identified as language support not required or mid-Year 12, whichever came first. The first survival analysis started with analysing the EAL/D Annual Survey data from the Kindergarten to Year 9 starters group to obtain a high-level picture of the progression times from the starting phase to Consolidating phase (or higher) as well as between phases. Due to the over-representation of the Kindergarten starters in the full cohort and the variations in the time to progress across starting year levels, separate survival analyses were conducted for each starter group specified in Table 8.

3.3.3 Step 3: Estimate the impact on learning time of demographic characteristics using survival analysis

The survival model takes into account student-level and school-level characteristics, and, through investigation of time ratios, the impact of different factors on the length of time taken to progress. For a categorical variable (e.g., gender), a time ratio of magnitude k indicates that the time taken by students with a specific characteristic (e.g., male) is k times that taken by students with the reference characteristic (e.g., female). A time ratio greater than 1 for a categorical variable indicates that the group of interest takes longer time to experience the event of interest than the reference group. A time ratio less than 1, on the other hand, means the group of interest takes shorter time to experience the event. For example, a time ratio of 1.1 for male students indicates that the time taken by male students to experience the event is 1.1 times the time taken by female students. In other words, male students took 10% longer to experience the event than female students.

For a continuous variable (e.g., SEA), a time ratio of magnitude k indicates that the time taken by students with a unit increase in a specific characteristic is k times that taken by students without that increase on the specific characteristic. A time ratio greater than 1 indicates that the time taken to experience the event increases when the variable increases. A time ratio less than 1 indicates that the time taken decreases when the continuous variable increases.

3.4 Collaboration and expert review

This project had strong input and support from members of the NSW DoE Multicultural Education team. Two members of the team joined AERO's project team in regular meetings to discuss the context of the project, the data and its interpretation, and what the findings mean for their work and EAL education in Australia.

The project was also guided by an expert advisory group, a group of experts in research and practice in the field of second or other language education in Australia. The group provided expert input into the interpretation of the results and implications for EAL education. Members are:

- Dr Michael Michell, School of Education, UNSW Sydney
- Professor Pauline Jones, School of Education, University of Wollongong
- Dr Susan Creagh, School of Education, The University of Queensland
- Kim Cootes, former EAL/D and Refugee Assistant Principal, Support Officer and Teacher, NSW Department of Education.

This report has been reviewed by NSW DoE and NESA to ensure that the data have been used appropriately. The methods used in this project and the reporting of the methods and results in this project have been reviewed by Dr John Ainley, formerly of the Australian Council for Education Research.

3.5 Limitations of methods

This section describes the limitations of the methods used in this research. Most of these applied to Part 1 analysis, and many were overcome through the analysis approaches taken in Part 2. Therefore, while the 2 datasets have their individual limitations, they can be viewed as complementary data sources. By bringing them together, this research was designed to make best use of all available data to produce strong evidence to address the research questions explored through this project. This rationale informed the design of the two-part analysis adopted in this project.

In Part 1 of the analysis, the dataset used contained NAPLAN results for reading and writing for students who were present in the NAPLAN assessments from 2014 to 2022. This means that academic English components of speaking and listening were not included in this analysis. It also means that the data was not complete as students who were absent, withdrawn or exempt from the tests had missing scores. The data gaps did not occur completely at random, as missing students tended towards having lower SEA, and the exemption rate was generally higher for the Beginning and Emerging students due to more limited English language skills. This means that the performance levels of the Beginning and Emerging cohorts are likely to have been overestimated, and times reported for reaching parity should be treated as optimistic estimates.

The propensity score matching procedure used in Part 1, while effective for reducing potential bias from confounding variables, led to some further limitations. For example, EAL students who had a refugee background could not be matched as there were no students in the non-EAL group with a refugee background. This meant students who were refugees were not able to be included in the analysis, and this, too, likely contributes to an underestimation of how long it takes to reach parity. This gap in the Part 1 analysis was filled in Part 2 where all eligible students remained in the dataset, including refugee students. An additional pattern observed for Part 1 is that the resulting SEA levels of the matched EAL students were slightly higher than the unmatched EAL students, again meaning the timeframes indicated in these results may be optimistic estimates of average/median timeframes for the EAL cohorts. The matching process also led to very small numbers in the Beginning phase group, which in turn led to Beginning and Emerging phase students being combined into one group for Part 1 analysis. Both limitations are addressed in Part 2, however, with students from all SEA levels included and each phase of English language development included with no amalgamation of groups.

The demographic characteristics of each Part 1 cohort were different. This meant that it was not possible to validly make direct comparisons between cohorts in Part 1. Part 2 analyses did not encounter this problem, however, as a statistical model was used to account for the differences in the demographic characteristics across cohorts.

One potential limitation identified in Part 2 methods related to the EAL/D Annual Survey data. As it relied on teachers' judgements, it was open to being affected by factors with potential to impact judgement. Having said this, research by CESE (2015; McGrane et al., 2016) found that teachers were able to make appropriate and reasonably consistent judgements of English language proficiency using the EAL/D Learning Progression[31] for each language mode (reading, writing, listening and speaking) as well as for the overall proficiency levels. Nonetheless, the quality of teacher judgements is susceptible to many factors, including teachers' prior experience in similar assessments, teacher knowledge of students and professional learning and training received.

A second limitation of Part 2 was the inability to analyse how long it takes students to progress through the Consolidating phase to language support not required, a limitation only impacting on the extent to which RQ2 – time taken to progress through the 4 phases on the Learning Progression – can be addressed. The research examined how long it takes students to reach the Consolidating phase (or higher) but not how long students spend in the Consolidating phase. This is because, in the dataset, there is no way to determine how long students stayed in the Consolidating phase. The EAL/D Annual Survey is used for resource allocation purposes and schools are not required to report on students who no longer require funded language support. For many students, the first time they are not captured in EAL/D Annual Survey data is the time that they no longer need language support, however, reasons for non-inclusion in the EAL/D Annual Survey could also be that students left the system – i.e., moved to a non-government school, interstate or overseas. Inability to determine if a student progressed out of the Consolidating phase or simply left the education system is the reason that the time spent in the Consolidating phase cannot be analysed using this dataset.

Finally, when considering factors that can impact language learning, there are numerous other factors relevant for English language learning that were not included in this research due to limitations in the datasets used. These include the nature and quality of prior educational experiences, such as access to literacy development in their first language, students' individual academic abilities, identity, motivation, affective factors and quality of instruction.

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31   For example, CESE (2015) shows that the reliability of teachers' judgements across all language modes, measured through dependability index, reaches the conventionally desired level of score reliability (i.e., 0.8) for high-stakes tests. This study also examined and provided positive evidence of other aspects of construct validity, such as structural, discriminant and convergent and measurement validity.

4. Results from Part 1 analysis

This section presents the results of Part 1 analysis in 4 subsections:

- Analysis Cohort 1
- Analysis Cohort 2
- Analysis Cohort 3
- Summary of Part 1 analysis results.

For each analysis cohort, the average NAPLAN reading and writing scores for matched EAL and non-EAL students were compared at each NAPLAN test round using repeated measures ANOVA, and statistical significance of differences was determined through performance of statistical tests for simple effects. As described in 3.2, this analysis was disaggregated by starting English language phase within each analysis cohort. The results for each level of this analysis are presented in this section. A statistically non-significant mean difference is taken to indicate that the EAL students reached parity with their non-EAL peers. Section 4.4 draws together the results from the 3 cohorts, providing a summary of results in Part 1 analysis.

4.1 Analysis Cohort 1

Cohort 1 was the group of EAL students who commenced school prior to mid-Year 3. Analyses were conducted to explore whether this group achieved parity of academic English results in NAPLAN reading and writing with their non-EAL peers by Year 9 (the last year they took part in NAPLAN). Analyses focused on how the average trajectory of EAL students compared to that of their matched non-EAL peers.

Improvement was seen over time for students who started in the Beginning/Emerging phase of English language development. The gap between Beginning/Emerging students' performance and that of their non-EAL peers in reading reduced by 33 score points from Year 3 to Year 9 (see Table 9), but parity in terms of average scores was not reached by Year 9. In writing, however, Beginning/Emerging students' performance increased to reach parity with their non-EAL peers in Year 7 and stayed on par with their non-EAL peers in Year 9, indicating a trajectory of performance relatively similar to non-EAL students.

Students who started in the Developing phase reached parity in NAPLAN reading with their non-EAL peers in Year 5. From this point on, the EAL group increasingly outperformed the non-EAL group – by 10 score points in Year 7 and 15 score points in Year 9. In writing, this group of EAL students performed above their non-EAL matched peers in Year 3 NAPLAN (by an average of 10 score points), continuing this trend by increasing margins through to Year 9, where the gap was 20 score points.

Consolidating students performed above the level of their non-EAL peers in their first NAPLAN round in both reading and writing. The positive gap between the average performance of Consolidating students widened over time in both reading and writing (13 and 7 score points, respectively).

Table 9: Difference in NAPLAN reading and writing performances for EAL students compared to non-EAL students in Analysis Cohort 1

NAPLAN domain	EAL status	Year 3	Year 5	Year 7	Year 9	Reach parity, year level if yes
Reading	Beginning/Emerging	▼ 41[32]	▼ 32	▼ 19	▼ 8	No
	Developing	▼ 6	=	▲ 10	▲ 15	Yes, Year 5
	Consolidating	▲ 22	▲ 25	▲ 32	▲ 35	Yes, prior to Year 3
Writing	Beginning/Emerging	▼ 14	▼ 12	=	=	Yes, Year 7
	Developing	▲ 10	▲ 14	▲ 17	▲ 20	Yes, prior to Year 3
	Consolidating	▲ 27	▲ 33	▲ 39	▲ 35	Yes, prior to Year 3

Note: ▼ indicates that the EAL students had lower performance (at 5% significance level).
▲ indicates that the EAL students had higher performance (at 5% significance level).
= means that the mean difference is not statistically significant.

Figure 7 presents the trajectories of NAPLAN scores for EAL students who commenced school prior to mid-Year 3 and their matched non-EAL peers. Figure 7(a) shows the results for reading, while Figure 7(b) shows the results for writing. The 95% confidence intervals are also plotted to indicate the range of the uncertainty around the estimated average score in each NAPLAN test year and provide a rough indication of whether the gap in reading between each group of EAL students and their matched non-EAL peers became non-significant.

Students in Beginning or Emerging phases began in Year 3 with considerably lower NAPLAN scores in both reading and writing than their non-EAL peers. For reading, the Beginning and Emerging students achieved an average score of 384.3 in Year 3, which was significantly lower than the score of 425.5 achieved by the matched non-EAL students (difference=-41.2, z=-11.2, p<.001). In the 3 subsequent NAPLAN reading tests, the differences were -31.9 (z=-8.7, p<.001), -18.9 (z=-5.2, p<.001) and -8.2 (z=-2.3, p=.025) score points in Years 5, 7 and 9, respectively, and the gaps remained statistically significant. While the gap between Beginning and Emerging student performance in reading appears to have reduced from Year 3 to Year 9, parity was not reached by Year 9.

The results for Beginning/Emerging students are different for writing. The writing results of the Beginning and Emerging students are significantly lower in Year 3 and Year 5 by more than 10 score points (Year 3: difference=-13.9, z=-4.4, p<.001; Year 5: difference=-11.8, z=-3.7, p<.001). However, these students progressed faster than their non-EAL peers and the differences became non-significant in Year 7 (difference=-5.1, z=-1.6, p=.107) and Year 9 (difference=-4.6, z=-1.4, p=.150). In short, Beginning and Emerging students reached parity in writing in Year 7 and achieved similarly, on average, to their non-EAL peers in Year 9.

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32 Based on the 2011 to 2021 NAPLAN data, the average standard deviations (SD) of reading scores for Years 3, 5, 7 and 9 are 86, 75, 68 and 67, respectively. For NAPLAN writing, the average SD of writing scores are 67, 67, 74 and 84 for Years 3, 5, 7 and 9 respectively (ACARA, 2022a).

In contrast, Developing students showed much stronger patterns of progression. In Year 3, Developing students achieved scores in reading that were lower than their non-EAL peers (difference=-5.7, z=-2.9, p=.004) before becoming on par in Year 5 (difference=-0.6, z=-0.28, p=.782) and then progressing at a faster rate to Year 9. For writing, the Developing students performed higher in Year 3 than non-EAL students (difference=10.2, z=6.0, p<.001) and the gap widened through to Year 9. By Year 9 both reading and writing scores for Developing EAL students were approximately 15 (z=7.4, p<.001) and 20 points (z=11.8, p<.001) above their matched non-EAL peers.

Consolidating students' progression was even stronger. They began with and then maintained higher scores than their non-EAL peers in all NAPLAN tests between Year 3 and Year 9. By Year 9, their scores in both reading and writing were approximately 35 points higher than their non-EAL peers (z=12.8, z=15.9, respectively, p<.001 in both cases), an increase in the gap between the 2 groups from Year 3. Therefore, Consolidating students' academic English performance appeared to accelerate compared to their non-EAL peers.

Figure 7: Average reading and writing performances for EAL subgroups and their matched non-EAL peers for 4 consecutive NAPLAN tests for Analysis Cohort 1

7(a) NAPLAN reading score
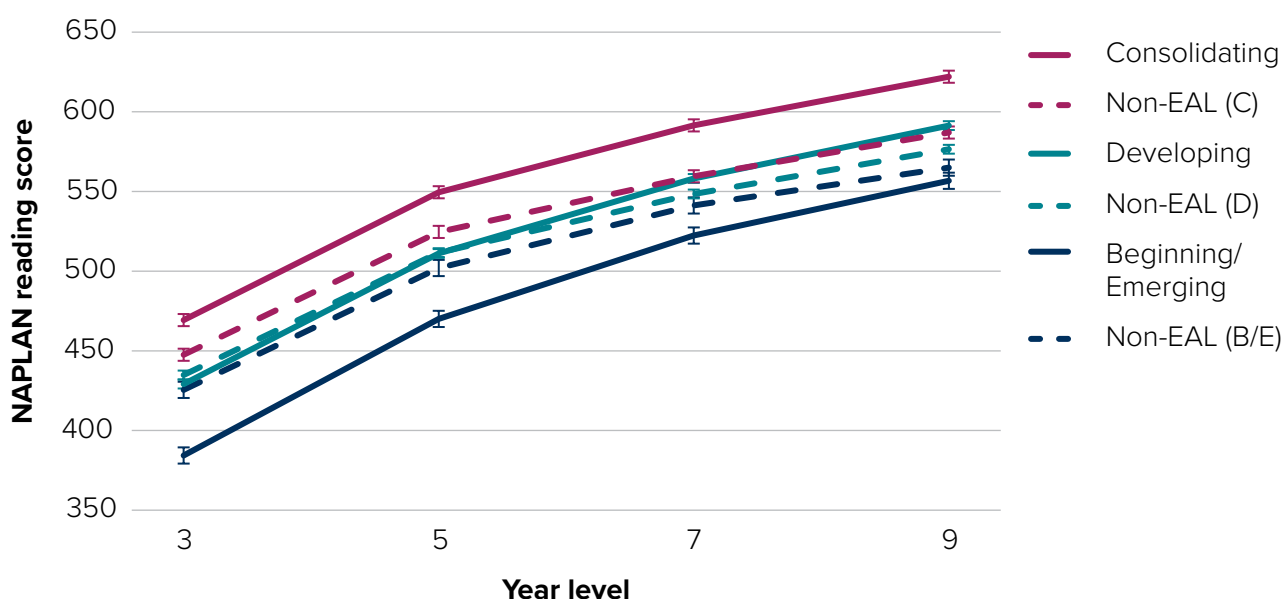
7(b) NAPLAN writing score
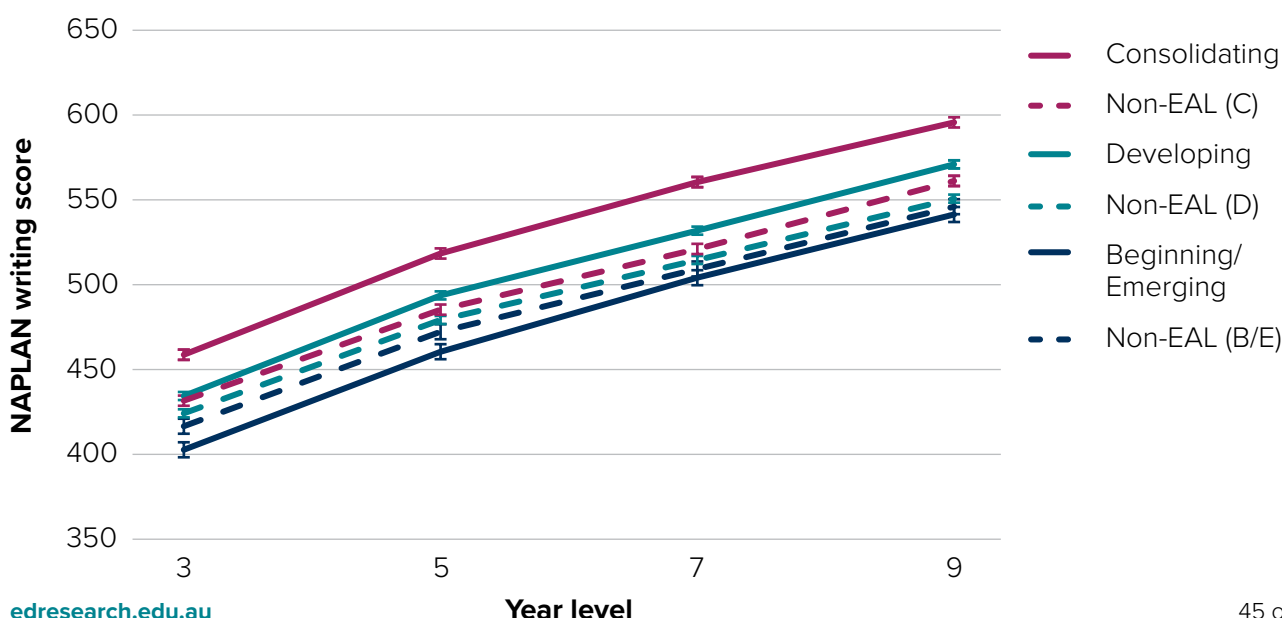
4.2 Analysis Cohort 2

Cohort 2 was the group of EAL students who commenced school between mid-Year 3 and mid-Year 5. Analyses were conducted to explore whether this group achieved parity of academic English NAPLAN results with their non-EAL-matched peers, and if so, at which year level. Again, this was explored by comparing the trajectories of this cohort of EAL students to their matched non-EAL peers.

The gap between Beginning/Emerging students' performance and that of their non-EAL peers in reading reduced significantly (by 61 score points) from Year 5 to Year 9 (see Table 10), but, on average, parity was not reached by Year 9. In writing, the gap between Beginning/Emerging students' performance and that of their non-EAL peers at Year 5 reduced significantly (by at least 46 score points) to reach parity with their peers in Year 9.

The gap between Developing students' performance and that of their non-EAL peers in reading at Year 5 reduced significantly (by 46 score points) to parity with their peers in Year 9. Developing students' performance in writing reached parity with their EAL peers in Year 7 and overtook them in Year 9 (by 18 score points).

Table 10: Difference in NAPLAN reading and writing performances for EAL students compared to non-EAL students in Analysis Cohort 2

NAPLAN domain	EAL status	Year 5	Year 7	Year 9	Reach parity, year level if yes
Reading	Beginning/Emerging	▼ 71	▼ 33	▼ 10	No
	Developing	▼ 48	▼ 18	=	Yes, Year 9
	Consolidating	=	▲ 31	▲ 39	Yes, Year 5
Writing	Beginning/Emerging	▼ 46	▼ 11	=	Yes, Year 9
	Developing	▼ 14	=	▲ 18	Yes, Year 7
	Consolidating	▲ 38	▲ 44	▲ 47	Yes, prior to Year 5

Note: ▼ indicates that the EAL students performed significantly lower than their matched non-EAL peers (at 5% significance level).
▲ indicates that the EAL students performed significantly higher than their matched non-EAL peers.
= means that the mean difference is not statistically significant.

Consolidating students' performance in reading was on par with their matched peers at Year 5. By Year 9, Consolidating students had an average performance of 39 score points above the non-EAL matched group, showing their accelerated learning. Consolidating students' performance in writing was 38 score points ahead of their peers at their first NAPLAN test and the positive gap widened by 9 score points by Year 9.

Figure 8 presents the trajectories of NAPLAN scores for EAL students who commenced school between mid-Year 3 and mid-Year 5 and their matched non-EAL peers. Figure 8(a) shows the results for reading, while Figure 8(b) shows the results for writing.

Students in Beginning or Emerging phases began in Year 5 with noticeably lower NAPLAN scores in both reading and writing than their non-EAL peers – Figure 8(a) shows the results for reading and Figure 8(b) shows the results for writing. For reading, Beginning and Emerging students achieved an average score of 433.2 in Year 5, which is 71.1 score points lower (z=-16.2, p<.001) than their matched non-EAL students. The EAL students in both Beginning and Emerging phases, however, made considerable progress between their first and final NAPLAN tests, reducing differences to 33 score points by Year 7 (z=-7.5, p<.001), and further reducing them to 10 score points by Year 9 (z=-2.2, p=.026). Despite their progress, by Year 9, the average of this group was still slightly behind parity with their non-EAL peers in reading. For writing, the results of the Beginning and Emerging students were significantly lower in Year 5 (difference=-45.5, z=-9.4, p<.001), but they progressed faster than their peers, reducing the gap to 11 score points (z=-2.3, p=.024) in Year 7 and achieving parity with their non-EAL peers in Year 9 (difference=+2.9, z=0.6, p=.556).

Figure 8: Average reading and writing performances for EAL subgroups and their matched non-EAL peers for 3 consecutive NAPLAN tests for Analysis Cohort 2

8(a) NAPLAN reading score
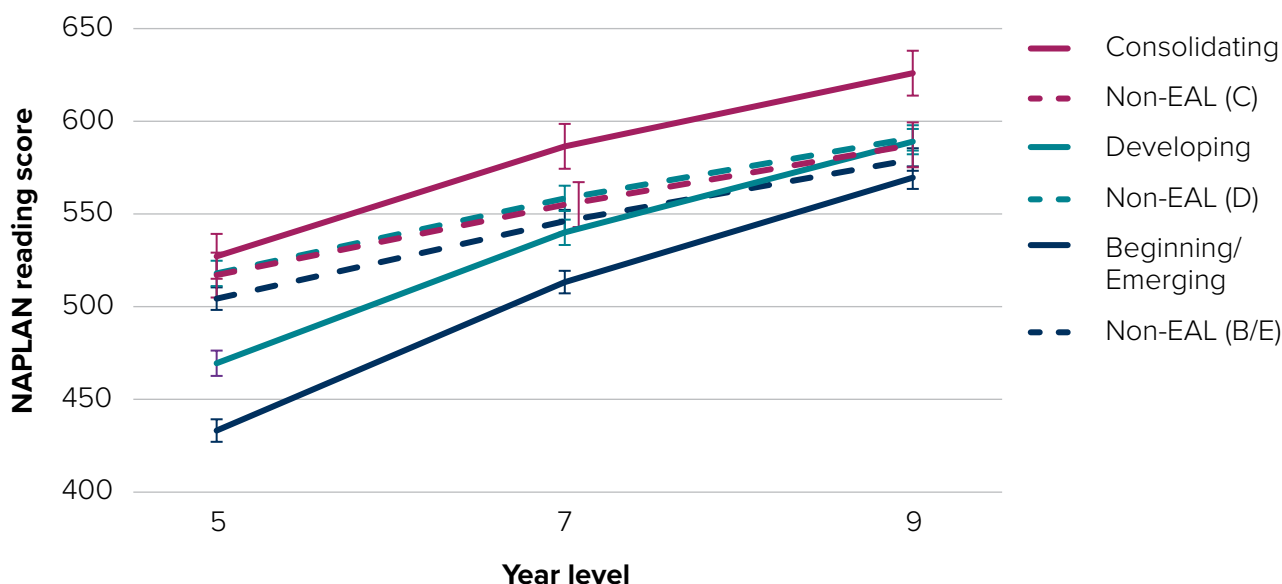
8(b) NAPLAN writing score
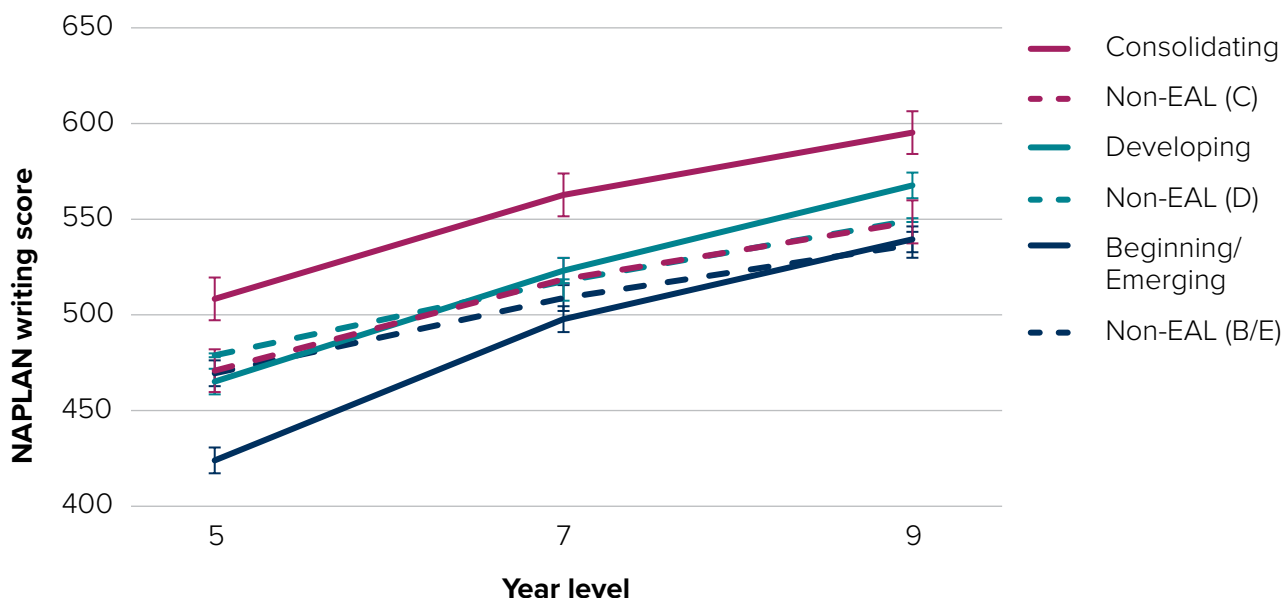
Different patterns of academic English progression were evident for students initially assessed as being at the Developing and Consolidating phases. Developing students' NAPLAN scores were approximately 48.5 score points lower than their non-EAL peers for reading (z=-9.8, p<.001) in Year 5. The difference reduced to 18.3 points in Year 7 (z=-3.7, p<.001) and the gap closed in Year 9 when the Developing students achieved parity with their matched non-EAL peers (difference=-2.0, z=-0.4, p=.685). For writing, the Developing students performed on average 13.7 score points lower in Year 5 (z=-2.8, p=.004). By Year 7 these differences had reduced to a very small margin (difference=+5.5, z=1.1, p=.253), and by Year 9, Developing students were performing above their matched non-EAL peers in writing (difference=+18.1, z=3.7, p<.001).

For Consolidating students, progress was even more marked. In Year 5, they were already on par in reading (difference=+10.1, z=1.2, p=.247) and above parity in writing (difference=+37.5, z=4.7, p<.001) in comparison to their non-EAL peers. Their progress to Year 7 and Year 9 continued to be faster than their non-EAL peers with the result that by Year 9, they were approximately 38.6 score points above parity for reading (z=4.4, p<.001) and 46.7 score points above for writing (z=5.8, p<.001).

In summary, analyses of NAPLAN results for Analysis Cohort 2 indicate that after 4 years of schooling in Australia, Beginning and Emerging students had still, on average, not reached parity with their non-EAL peers in reading despite their fast progression. This group did progress more strongly in writing, reaching parity with non-EAL peers in Year 9. In contrast, Developing students caught up in both writing and reading after 2 and 4 years, respectively. The average of Consolidating students was consistently higher than that of their non-EAL peers after Year 5.

4.3 Analysis Cohort 3

Cohort 3 was the group of students who commenced school in Australia between mid-Year 5 and mid-Year 7. Analyses were conducted to determine whether this group achieved parity of average academic English NAPLAN results through comparison of the average trajectories of EAL students with those of their matched non-EAL peers.

The gap between Beginning/Emerging students' performance and that of their non-EAL peers in reading and writing reduced by 30 and 25 score points, respectively, from Year 7 to Year 9, but parity of average scores was not reached (see Table 11).

The gap between Developing students' average performance and that of their non-EAL peers in reading reduced by 21 score points from Year 7 to Year 9, but parity was not reached. In writing, the gap between Developing students' average performance and that of their non-EAL peers reduced by 16 score points to parity with their peers in Year 9.

Consolidating students' performance in reading was, on average, on par with their matched peers at Years 7 and 9. Their performance in writing was on par with their non-EAL peers at their first NAPLAN test in Year 7, but exceeded that of their non-EAL peers by 27 score points in Year 9.

Table 11: Difference in NAPLAN reading and writing performances for EAL students compared to non-EAL students in Analysis Cohort 3

NAPLAN domain	EAL status	Year 7	Year 9	Reach parity, year level if yes
Reading	Beginning/Emerging	▼ 69	▼ 39	No
	Developing	▼ 42	▼ 21	No
	Consolidating	=	=	Yes, Year 7
Writing	Beginning/Emerging	▼ 44	▼ 19	No
	Developing	▼ 21	=	Yes, Year 9
	Consolidating	=	▲ 27	Yes, Year 7

Note: ▼ indicates that the EAL students performed significantly lower than their matched non-EAL peers.
▲ indicates that the EAL students performed significantly higher than their matched non-EAL peers.
= means that the mean difference is not statistically significant.

Figure 9 presents the trajectories of NAPLAN scores for EAL students who commenced school between mid-Year 5 and mid-Year 7 and their matched non-EAL peers. Figure 9(a) shows the results for reading, while Figure 9(b) shows the results for writing.

Beginning and Emerging students made progress in the 2 years between their Year 7 and Year 9 NAPLAN reading and writing tests. Despite this, however, their average performance remained considerably below that of their non-EAL peers. In their initial Year 7 tests, Beginning and Emerging students' average results were 69.3 score points ($z=-16.4$, $p<.001$) lower than their matched non-EAL peers in reading and 43.6 score points lower in writing ($z=-8.7$, $p<.001$). By Year 9, these gaps had reduced to EAL students achieving average scores that were 39.5 score points behind their matched non-EAL peers in reading ($z=-9.3$, $p<.001$), and 18.5 score points behind in writing ($z=-3.7$, $p<.001$).

Figure 9: Average reading and writing performances for EAL subgroups and their matched non-EAL peers for 2 consecutive NAPLAN tests for Analysis Cohort 3

9(a) NAPLAN reading score
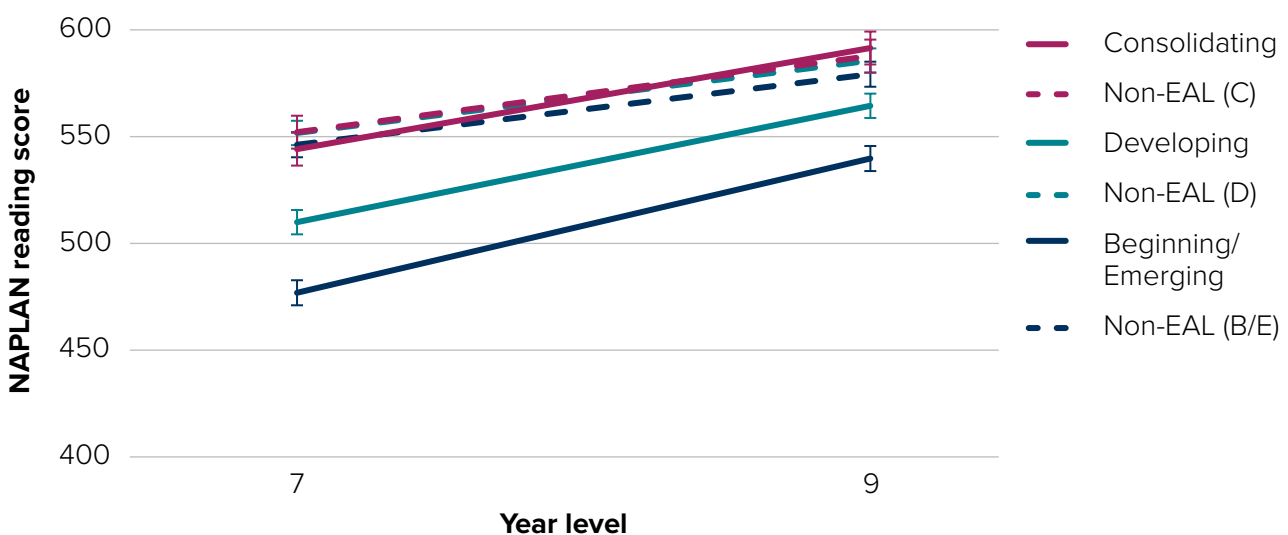
9(b) NAPLAN writing score
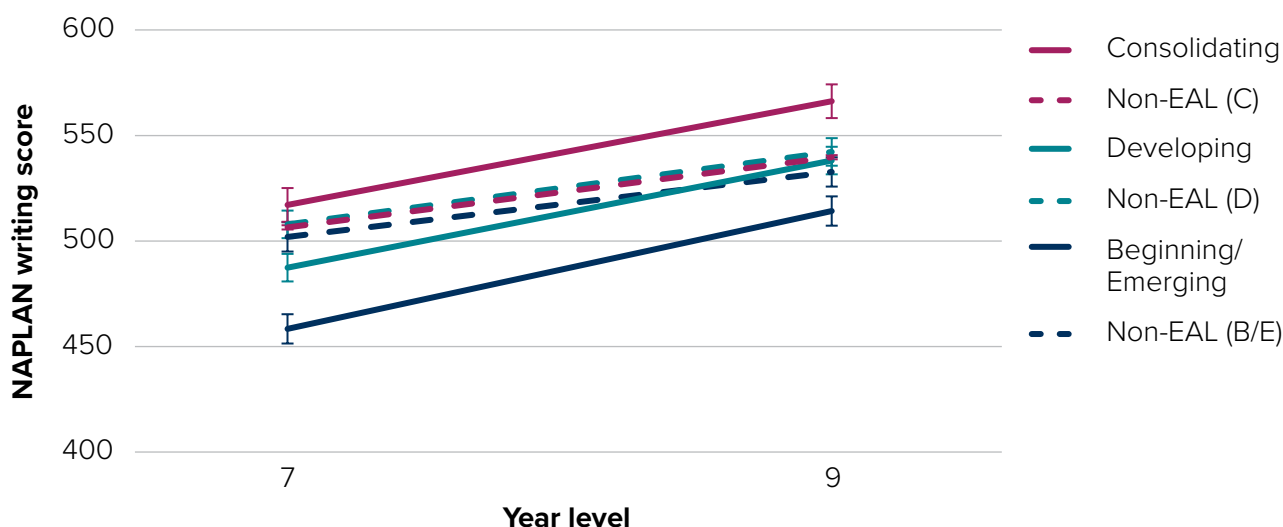
For Developing students, Year 7 results in both reading and writing were considerably lower than their non-EAL peers (reading: 41.8 points lower, z=-10.2, p<.001; writing: 20.5 points lower, z=-4.4, p<.001). By Year 9, the differences in average writing scores had largely disappeared with students achieving parity (difference=-4.1, z=-0.9, p=.386). In contrast, their average reading performance remained 21.2 score points below their non-EAL peers (z=-5.2, p<.001).

NAPLAN results for Consolidating students were stronger. In their Year 7 NAPLAN tests, Consolidating students performed slightly below their non-EAL peers (difference=-7.9, z=-1.4, p=.153) for reading and slightly above (difference=+10.6, z=1.9, p=.065) for writing, with neither of these differences being statistically significant. By Year 9, their average NAPLAN scores had increased at a faster rate, particularly for writing, which brought the Consolidating students to above their non-EAL peers in writing (difference=+26.5, z=4.6, p<.001) while remaining on par in reading (difference=+3.8, z=0.7, p=.499).

In summary, the groups of students who were assessed as being at Beginning/Emerging and Developing phases of their language development in Year 7 did not, on average, reach parity in reading with non-EAL students by Year 9. In contrast, the group of students assessed as being at the Developing phase did reach parity in writing in Year 9.

4.4 Summary of Part 1 analysis results

This section summarises the results from Part 1 analysis – identifying when EAL students achieved average parity of academic English NAPLAN results with their non-EAL peers, and how the trajectories of the matched EAL and non-EAL groups of students compare.

As can be seen in Table 12, across the different contexts considered in Part 1 analyses, it was consistently found that parity was achieved faster by students who entered school with higher levels of English language proficiency, and parity was achieved faster in writing than reading.

Table 12: Summary of Part 1 analysis results

EAL status	Domain	Year when parity achieved
Beginning/ Emerging	Reading	Cohorts 1, 2, 3: Parity not reached by Year 9
	Writing	Cohort 1: Year 7 (4 years) Cohort 2: Year 9 (4 years) Cohort 3: Parity not reached by Year 9
Developing	Reading	Cohort 1: Year 5 (2 years) Cohort 2: Year 9 (4 years) Cohort 3: Parity not reached by Year 9
	Writing	Cohort 1: Outperformed non-EAL peers in first test Cohort 2: Year 7 (2 years) Cohort 3: Year 9 (2 years)
Consolidating	Reading	Cohort 1: Outperformed non-EAL peers in first test Cohorts 2, 3: On par with non-EAL peers in first test
	Writing	Cohorts 1, 2: Outperformed non-EAL peers in first test Cohort 3: On par with non-EAL peers in first test

Considered together, the findings in Part 1 from the different cohorts with different starting ages at Australian schools, show that students assessed with Beginning/Emerging phases of English tended towards being likely to reach parity of academic English skills (both reading and writing) with non-EAL peers at least 6 years after their first NAPLAN test. This is a conservative estimate, given that the quickest cohorts achieved parity in writing, on average, 4 years later, but none of the cohorts were able to do so in reading by the last NAPLAN testing round in Year 9.

In contrast, students starting school in Australia at a variety of ages in the Developing phase of English were able to reach parity around 4 years after their first NAPLAN test in reading, and faster in writing.

Several factors mean that the times estimated for Beginning/Emerging students (at least 6 years) and Developing phase students (4 years) to reach parity are conservative estimates. That is, students had an unknown number of years of schooling, language learning and time at their starting phase prior to the first time they sat a NAPLAN test. This limitation is addressed in Part 2 analysis where the English language proficiency levels at enrolment of students were tracked to their last or latest enrolment point.

Another point to contextualise the findings is that parity of academic English results was achieved by students with some level of EAL support provided by NSW DoE between 2014 and 2022.

Importantly, findings in Part 1 show that when students reach the Consolidating phase, they are achieving similar or better average academic English results than their non-EAL peer groups. This provides the justification for Part 2 analysis to use Consolidating (or higher) phase as a proxy for the level of English proficiency EAL students need to equitably access curriculum learning.

5. Results from Part 2 analysis

This section presents the results from the survival analysis of the EAL/D Annual Survey data for all students included in the dataset starting at New South Wales public schools any time from Kindergarten to Year 9. Section 5.1 details the time taken to reach Consolidating phase (or higher) and the time taken to progress through phases, reporting the median and typical range.[33] The analysis was repeated for different subgroups of students, based on whether they began school in New South Wales public schools in Kindergarten, Year 1 to 2, Year 3 to 6 or Year 7 to 9, and yielded very similar results in each instance. Results are presented here for the full group of students, regardless of starting year, and more detailed results broken down by starting year are provided in additional results A and B.

Section 5.2 focuses on the impact of different demographic factors on the length of time taken by students to progress through phases. This part of the analysis also used the full dataset, containing results for students starting at New South Wales public schools any time between Kindergarten and Year 9.

5.1 Time taken to progress through phases for Kindergarten to Year 9 starters

Kindergarten to Year 9 starters are students who first enrolled in New South Wales public schools between Kindergarten and Year 9 prior to the mid-year EAL/D Annual Survey and represent the full dataset. The results presented here show the time taken to reach the Consolidating phase (or higher) and the time taken to progress through phases.

These results were obtained from models that also included a group of demographic variables. As such, the results about the amount of time typically taken to progress should be understood as the time taken for the fastest 50% of students holding typical demographic profiles.[34] The benefit of this approach is that timeframes are presented controlling for demographic factors. However, it also means that specific timeframes from these analyses should be interpreted in the context of the typical demographic reference profile pertinent to each analysis.

Another important consideration regarding the interpretation of results in this section is that the time estimated to reach Consolidating (or higher) represents the time that students first reached that phase. Similar to the learning of other skills, the typical trajectory of English language learning is often not linear, and about 7% of all EAL students in our dataset regressed to a lower proficiency level after the first time of reaching the Consolidating phase. This means the time presented in this section is an optimistic estimate of time required to reach and sustain each level of proficiency.

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33   The typical range of time is expressed as the range of the 25th percentile to 75th percentile. These percentiles were chosen because they represent the range of the middle half of the students and are less affected by any outliers in the data. However, students falling above and below this range will take longer and shorter times than indicated.

34   From a technical sense, students holding typical demographic profiles mean those who have the average values for each of the demographic variables controlled for in the model. The demographic variables considered in all models include gender, refugee status, new arrival status, school remoteness and SEA. In all analyses run for section 5, SEA was included in modelling as a continuous variable except in analysis performed for section 5.2.2 where SEA quarter – the quarter where a student's SEA score fell – was used in place of the continuous SEA variable.

5.1.1 Time taken to reach Consolidating phase (or higher)

EAL students took a wide range of times to reach the Consolidating phase (or higher). Figure 10 shows the median and typical range of time taken for all Kindergarten to Year 9 starters to reach the Consolidating phase (or higher). The median time taken represents how long it took for the fastest 50% of students[35] to reach the Consolidating phase (or higher). The typical range (indicated beneath the horizontal bars) shows at its limits the time taken for the fastest 25% of students and 75% of students, respectively, to reach the Consolidating phase (or higher).

Figure 10: Time taken by all Kindergarten to Year 9 starters to progress from different phases to Consolidating phase (or higher)
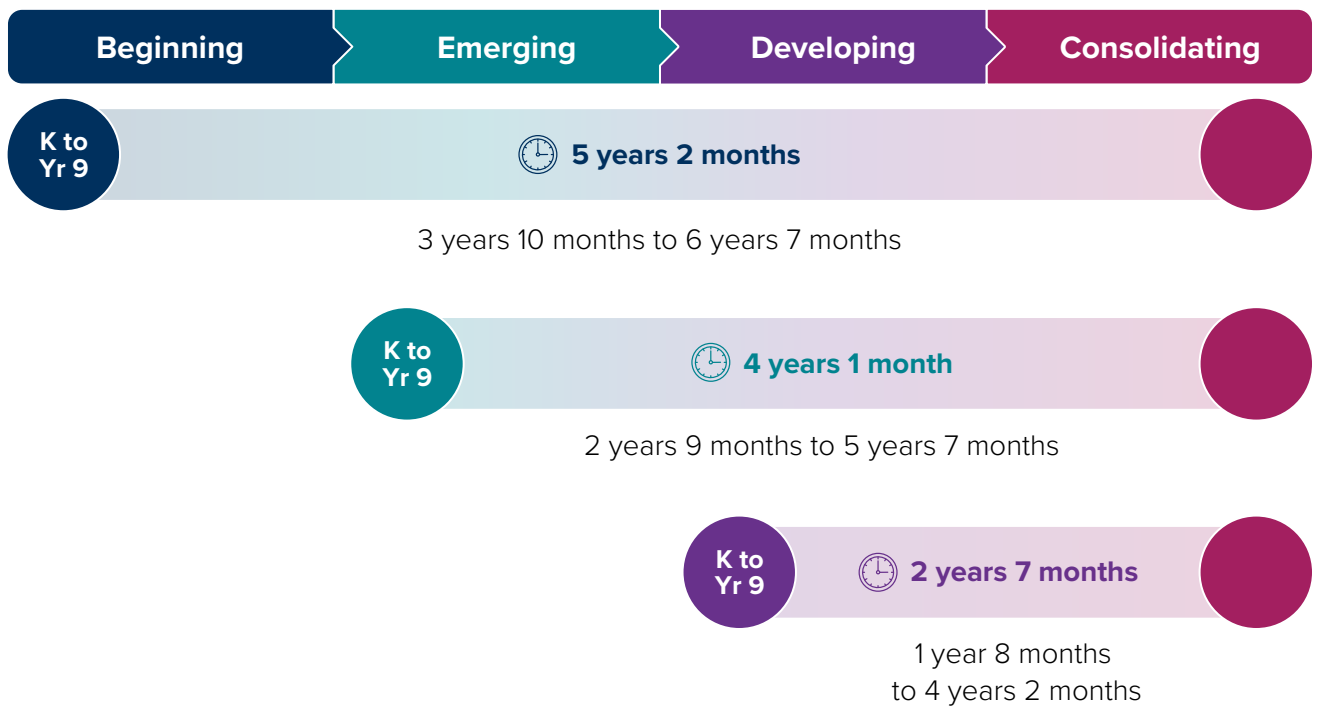
Beginning	Emerging	Developing	Consolidating

K to Yr 9 — 🕐 **5 years 2 months**

3 years 10 months to 6 years 7 months

K to Yr 9 — 🕐 **4 years 1 month**

2 years 9 months to 5 years 7 months

K to Yr 9 — 🕐 **2 years 7 months**

1 year 8 months to 4 years 2 months

Note: Horizontal bars show the times taken by the fastest 50% of typical students to reach the next phase.
The times beneath show the estimated times for the fastest 25% and 75% of typical students to reach the next phase.

As shown in Figure 10, students initially placed at the Beginning phase had the longest median time to reach the Consolidating phase (or higher) (median of 5 years 2 months). Students starting in Emerging phase had a shorter median time to Consolidating phase (or higher) by about a year (median time of 4 years 1 month). Students commencing in the Developing phase had the shortest median time to Consolidating phase (or higher) (median of 2 years 7 months).

Typical ranges presented in Figure 10 show that there is considerable variation in the time taken to reach Consolidating (or higher) phase, even among students who hold the same (typical) demographic profiles. Generally, the fastest 25% of students took 2 to 3 years less time to reach the Consolidating phase (or higher) than the fastest 75% of students in the cohorts.

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35   Students who hold typical demographic profiles.

5.1.2 Time taken to progress through phases

The project further explored the median time taken across the whole group of students (starting at any school year from Kindergarten to Year 9) to progress from one phase to the next. This analysis included some students who progressed to a phase higher than the next phase after a year (see 3.3.2 for more detail). The median times and typical ranges are shown in Figure 11. These demonstrate that the median time taken to progress to each subsequent level (e.g., from Emerging to Developing) is comparable regardless of the starting phase in which students entered school in New South Wales. Progression between the Beginning and Emerging phases takes around a year (median = 1 year and 1 month). Between the Emerging and Developing phases, an interval of a little over a year and a half is seen (median ranges from 1 year and 7 months to 1 year and 8 months). For progression between Developing and Consolidating phase (or higher), the interval is around 2 and a half years (median ranges from 2 years and 5 months to 2 years and 8 months).

Figure 11: Time taken by Kindergarten to Year 9 starters to progress to next phase (or higher)
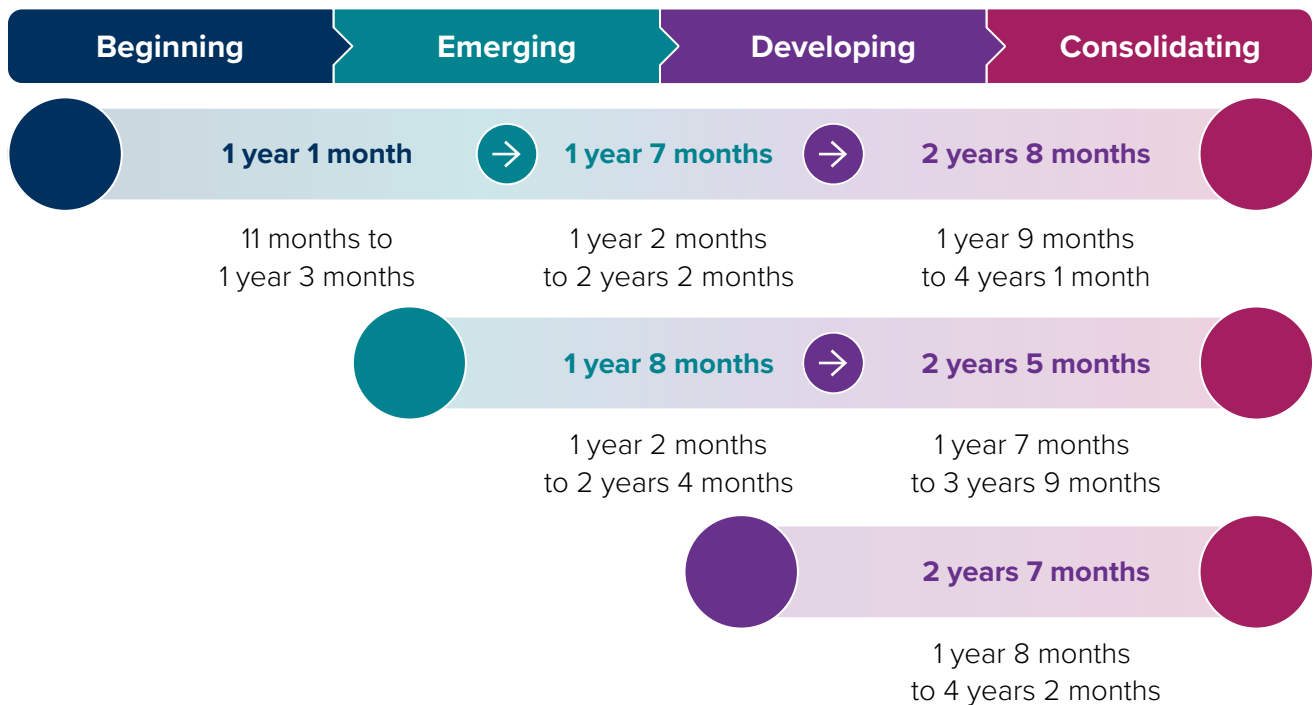
Note: Horizontal bars show the times taken by the fastest 50% of typical students to reach the next phase.
The times beneath show the estimated times for the fastest 25% and 75% of typical students to reach the next phase.

5.2 Subgroup analysis

This section outlines the demographic factors identified as being linked to slower progression from the starting phase to the Consolidating phase (or higher). It also shows the estimated magnitudes of the impacts of those factors on progression speed. Results are based on all students from Part 2 analysis, incorporating Kindergarten to Year 9 starters.

5.2.1 Demographic characteristics associated with faster or slower progress

Descriptive analyses were first conducted to explore the demographic characteristics associated with taking a longer time to develop English language proficiency to the Consolidating phase (or higher). Figure 12 shows the percentage of Kindergarten to Year 9 starters who had progressed to the Consolidating phase (or higher) after 3 years disaggregated by subgroups of various characteristics.[36] These percentages are also reported in Appendix F.1.

Figure 12: Percentage of students reaching Consolidating phase or higher after 3 years in each subgroup for Kindergarten to Year 9 starters commencing at different phases

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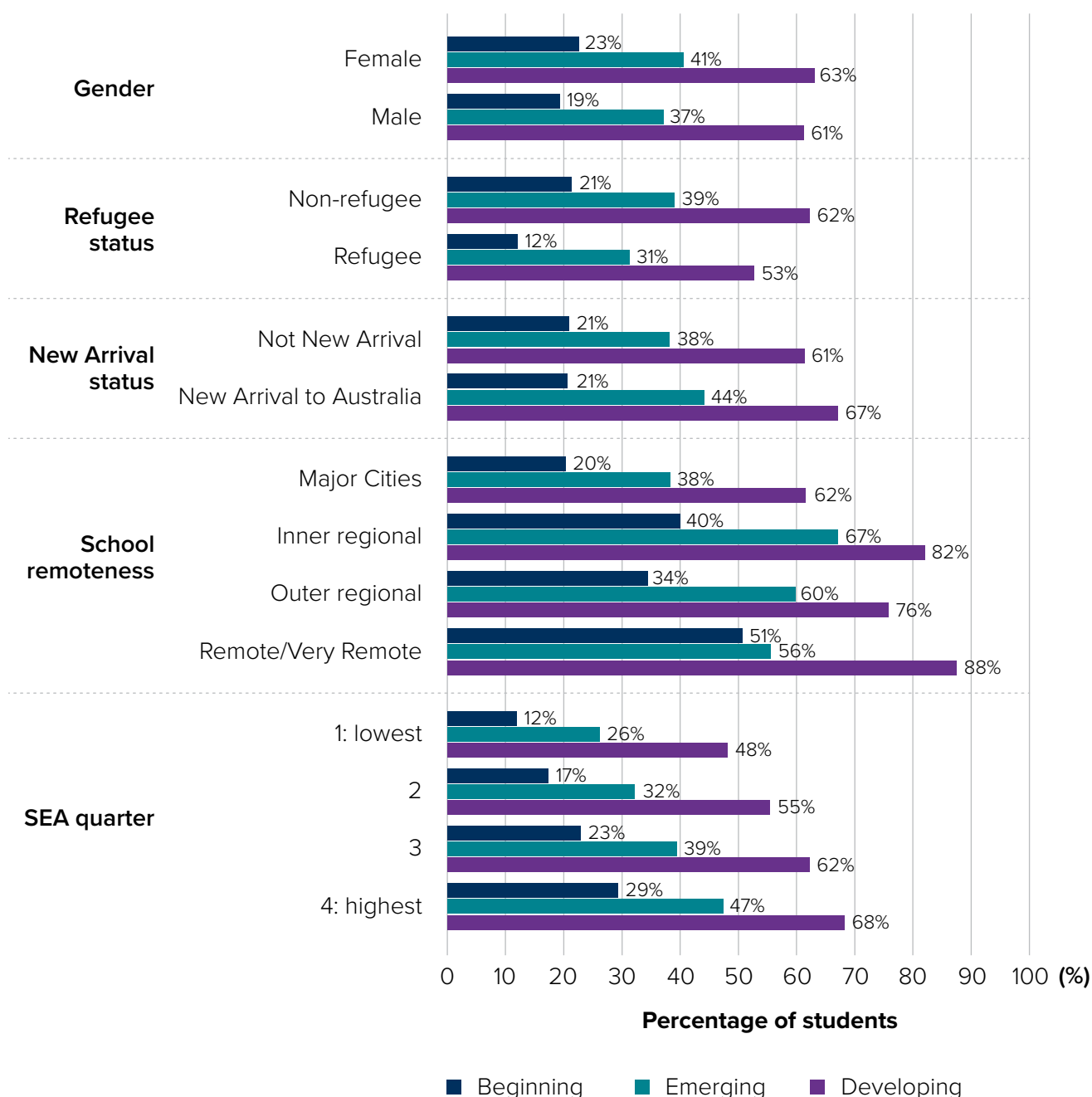
36   School mobility is not included in the descriptive analysis because it is a continuous variable. Additionally, this variable has a negligible (though statistically significant) effect on learning progress speed (see section 5.2.2 for more information).

Across the starting phases, several subgroups had consistently lower proportions of students who had progressed to the Consolidating phase (or higher) after 3 years. Male students had slightly lower proportions compared to female students. Refugee students (students who have been on a refugee visa) had markedly lower proportions than non-refugee students.

The location of schools appeared to be relevant to the proportions of students progressing after 3 years, with lower proportions of students attending schools in major cities progressing compared to those attending school in regional or remote areas. Similarly, socio-educational situations of students' families appeared to impact the progression of students, with each increasing SEA quarter being associated with successively higher proportions of students progressing after 3 years.

Interestingly, a larger proportion of students who started school in New South Wales public schools with a new arrival status[37] and were identified as being at Emerging and Developing phases of English progressed to the Consolidating phase (or higher) after 3 years compared to non-new arrival students. However, among Beginning students, a similar proportion of new arrival and non-new arrival students progressed after 3 years to the Consolidating phase (or higher).

5.2.2 Time taken to progress by demographic factors

To understand the relative importance of the included demographic characteristics and students' starting phases of English language proficiency, together with the nature of their independent effects, the time ratios generated by the survival model were explored. These results are based on the full cohort of students starting any time between Kindergarten and Year 9.

Figure 13 shows the independent effects of each of the demographic variables and each of the starting phases of English proficiency. The time ratios shown are non-significant when they are indistinguishable from a value of 1 (indicated by the time ratio's confidence interval incorporating the value of 1). A time ratio greater than 1 (with its confidence interval sitting above 1) indicates significantly slower progress, and a time ratio less than 1 (with its confidence interval sitting below 1) indicates significantly faster progress for a particular demographic subgroup relative to its reference category, controlling for the other variables included in the model. The time ratio and the confidence interval associated with each demographic factor are included in Appendix F.2.

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37   In NSW government schools, students are identified as new arrivals (thus eligible for New Arrivals Program funding) if the students are newly arrived in Australia and speak a language other than English as their first language; require on-arrival, initial intensive English language support as they are assessed at the Beginning or Emerging phase of English language proficiency against the ACARA EAL/D Learning Progression; have enrolled in their first school in Australia within 6 months of arrival or within 18 months of arrival for Kindergarten students; have enrolled in an Australian school for the first time or have transferred schools within 6 months of first enrolment. For more information, see the NSW DoE New Arrivals Program Operational Guidelines 2023. It's noted that, in the data file we received, a small proportion (10%) of students recorded with a 'New Arrivals' status had 'Developing phase' as the starting phase, despite the guidelines mentioned above.

Figure 13: Time ratios for progressing to Consolidating phase or higher pertaining to demographic characteristics for students starting Kindergarten to Year 9 across all starting phases (Beginning, Emerging and Developing phases)
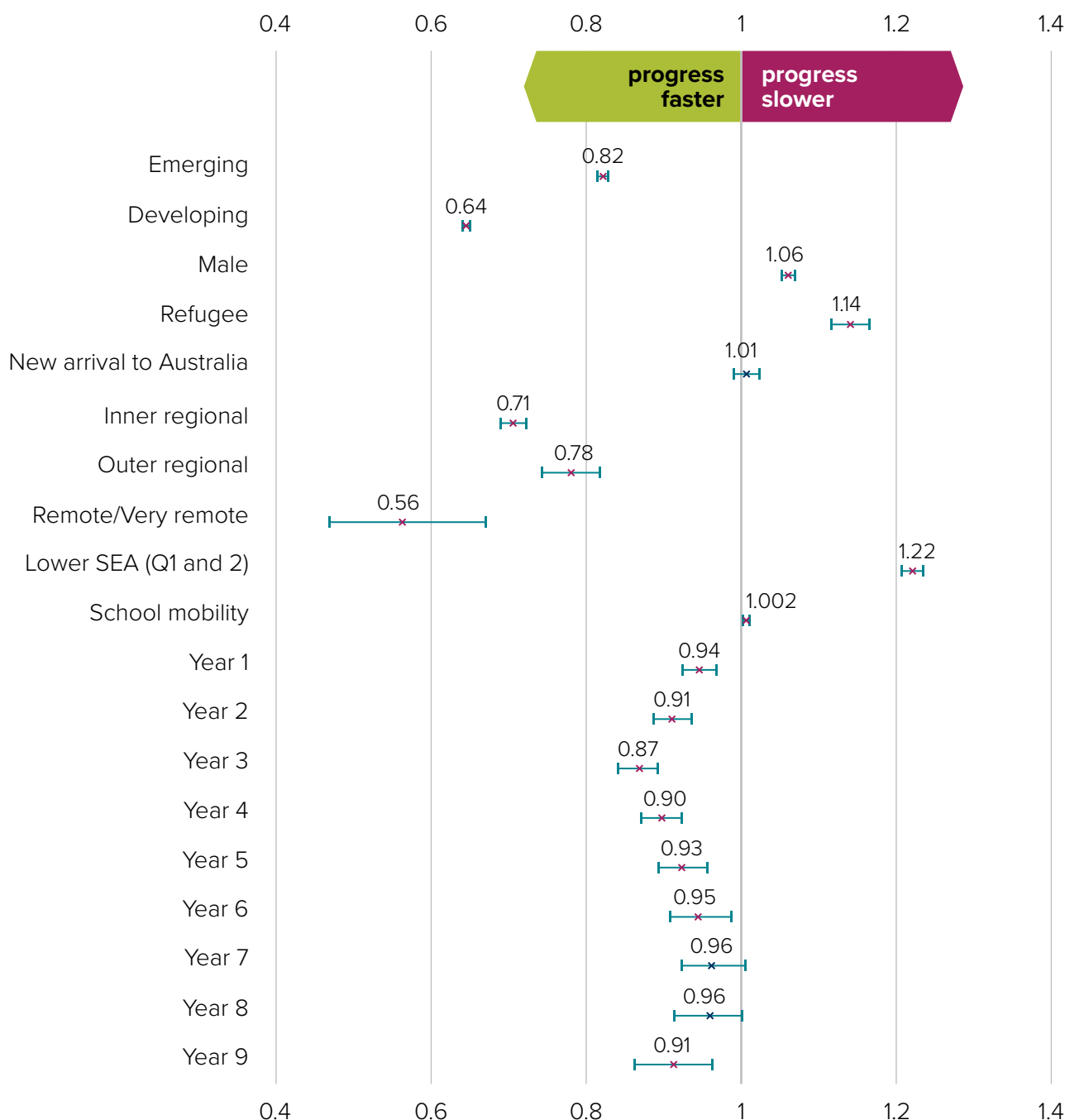
Note: The reference group for Emerging phase and Developing phase is Beginning phase; male is female; the reference group for refugee is non-refugee; the reference group for new arrival in Australia is non-new arrival; the reference group for inner regional, outer regional, and remote/very remote is major cities; the reference group for lower SEA (Q1 and Q2) is higher SEA (Q3 and Q4) and the reference group for all starting year levels is Kindergarten. For school mobility, as a continuous variable, the effect is described as the percentage change in the time to progress per unit increase in school mobility. A red cross indicates a statistically significant time ratio and a navy cross indicates a non-significant time ratio.

The analysis confirmed, firstly, a key finding from the previous sections: that students starting school with a higher English proficiency level took less time to reach the Consolidating (or higher) phase. Students with a starting phase of Emerging or Developing took 18% and 36% less time (both $p<.001$), respectively, than students with similar demographic characteristics who started schooling in the Beginning phase.

Furthermore, the analysis showed that students based outside major cities – whether in inner or outer regional or remote or very remote settings – progressed significantly faster than the city-based students. The time ratios were considerable, showing reductions in time for non-major cities students of between 22% and 44% (all $p<.001$) relative to their city-based peers. Additionally, it showed that students in the lower half of the SEA scale progressed 22% slower than those in the higher half of the scale ($p<.001$).

Students starting school in Year 1 to Year 6 progressed faster by 5% to 13% (all $p<.01$) to the Consolidating phase (or higher) than Kindergarten starters. By transforming the time ratios for Year 1 to Year 6 starters, Kindergarten students were 5% to 15% slower to develop the language skills to equitably access curriculum learning than those starting in higher primary year levels.

Results showed small significant effects for having a refugee background, which was associated with slower progress times (14% slower; $p<.001$). Male students progressed significantly slower than female students, although the effect was small (6% slower than females; $p<.001$).

Finally, no significant effect was found for students associated with having been part of the NSW DoE's New Arrivals Program compared with those that had not been part of the program ($p=.298$).

6. Discussion

This section draws together key results from the research and considers their implications in the context of the project and previous findings from relevant literature. It also presents a discussion of the results as they relate to teachers working to support the learning of EAL students.

Section 6.1 addresses the question of how long it takes for EAL students to participate equitably in curriculum learning, while 6.2 discusses the findings regarding how long it takes to progress between phases of English language development. In 6.3, the impact of specific factors relating to students and their experiences is unpacked, while section 6.4 highlights the implications of this research for policy, practice and research.

6.1 How long does it take EAL students in New South Wales public schools to participate equitably in curriculum learning?

The first key finding of this research is that it takes school students considerable time to learn English to a level where they can participate equitably in the curriculum. By comparing the NAPLAN reading and writing results of EAL and non-EAL student groups over time, the analysis in Part 1 showed that, on average, students entering school in the Beginning and Emerging phases[38] of English require at least 6 years of schooling to reach parity of academic English proficiency with their non-EAL peers with similar demographic characteristics. Students at the Developing phase[39] of English require, on average, 4 years to reach this point.

In contrast, students who enter school at the Consolidating phase,[40] on average, consistently achieved similar or better academic English results than their non-EAL peers. These findings, using NAPLAN results as a proxy for academic English, confirmed that the Consolidating phase is an indication of when students are likely to have the English language skills necessary to equitably participate in curriculum learning. Having said this, students whose level of English is assessed as Consolidating are likely to require several years to work though the phase. In addition, students who are initially assessed as Consolidating, may regress before, again, reaching the Consolidating phase. In short, students who have reached this phase are progressing well, but they are still in the process of developing academic English. ACARA's descriptors, for example, explain that Year 7 to 9 students at the beginning of the Consolidating phase are likely to 'understand most of the information they encounter daily within the school environment' and will 'understand literal and inferential information in most classroom texts' (ACARA, 2015), most being the key word. Despite their progress, if EAL students at the Consolidating phase are to reach their full academic potential, they will require ongoing targeted support with their academic language development and cultural demands of tasks.

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38   Phases of ACARA's EAL Learning Progression. Beginning English phase means students with some print literacy in their first language and Emerging English phase means students have a growing degree of print literacy and oral language competency with English.

39   Developing English means students are further developing their knowledge of print literacy and oral language competency with English.

40   Consolidating English means students have a sound knowledge of spoken and written English, including a growing competency with academic language.

Results from Part 2 analyses provide further insights into the rate at which students learn an additional language. The analysis of teacher judgements of students' progression through English language phases shows that, across all students who entered school any time between Kindergarten and Year 9, those starting with the Beginning phase of English take a median time of 5 years and 2 months to reach the Consolidating phase (or higher), whereas students with Emerging and Developing phases take a median time of 4 years and 1 month and 2 years and 7 months, respectively.

Results from Part 1 and Part 2 analyses differ slightly. The median times to reach the Consolidating phase (or higher) (Part 2 results) are shorter than the average times to reach parity in NAPLAN results (Part 1 results). These differences likely reflect the differences in data sources and methods of analysis across the 2 parts of the study. Part 1 results were based on students' scores in NAPLAN reading and writing – standardised tests of reading and writing (proxies for academic English outcomes) – while the teacher judgements used in Part 2 were holistic assessments of students' level of English, and hence include judgements of students' levels of oracy as well as literacy. Additionally, the time estimates from teacher judgements represent the time taken for students to reach the Consolidating phase for the first time and do not account for the students who regressed to a lower proficiency level[41] before progressing again to the Consolidating phase. A further possible explanation lies in the nature of NAPLAN tests. Over the years there have been consistent claims of monolingual and cultural bias within the tests that disadvantage students from diverse backgrounds (e.g., Dooley & May, 2013; Hudson & Angelo, 2022). It is, therefore, possible that the different results reflect this bias. Finally, in contrast to the EAL/D Annual Survey, NAPLAN is only administered every 2 years and may be a lagging indicator of when students reach parity.

Despite these differences, the combined evidence from the research indicates that it could take students entering school at the **Beginning phase of English language proficiency, on average, at least 6 years, and Emerging and Developing phase students, on average, at least 4 years and 3 years, respectively, to develop the English language skills required to equitably participate in curriculum learning.**

These findings are consistent with those from previous research. As indicated in section 2, researchers in America and the United Kingdom have consistently estimated that EAL students who enter school with beginning levels of English require between 5 to 7 years to achieve parity with their non-EAL peers, and possibly longer depending on the impact of other factors (Collier & Thomas, 2017; Cummins, 1981b; Demie, 2013; Hakuta et al., 2000).

Importantly, the findings are also consistent with those from the Queensland-based research of Creagh et al. (2019), which concluded that EAL students require a minimum of 4 to 7 years to reach parity with their non-EAL peers in reading.

A second finding of this research is that EAL students achieved parity in writing faster than reading – in most cases by 2 years. A possible explanation is that as developing bilinguals, EAL students can compare and contrast languages in ways that build their understanding of language systems and structures. As a result, they can develop a more explicit understanding of language than their monolingual peers, and this assists them in writing. This explanation is consistent with previous findings regarding the cognitive and linguistic advantages for students of being bilingual (Collier & Thomas, 2017; Cummins, 1981b, 1991; Hornberger, 2003).

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41   In the datafile used for this project, 7% of students who reached the Consolidating phase (or higher) for the first time regressed to a lower level of proficiency later, before progressing back to the Consolidating phase.

It also highlights the importance for teachers in understanding the relative strengths and weaknesses in reading and writing of EAL students and the broad student population so that they can adapt teaching strategies to respond to specific needs of learners.

A third finding is that students who enter school with higher English proficiency levels take less time to reach the level needed to participate equitably in curriculum learning. This finding is not surprising and is consistent with outcomes of previous research (Demie, 2013; Kieffer, 2008; Strand & Demie, 2005; Strand & Lindorff, 2020). However, the current research provides new evidence regarding this point. Specifically, students with a starting phase of Emerging or Developing took 18% and 36% less time, respectively, than students with similar demographic characteristics who started schooling at the Beginning phase. The project thus highlights the importance of the relationship between students' English language and literacy development and their progress at school. Through this, it has implications for the ways in which teachers, schools and systems plan and implement EAL support programs that recognise the varying levels of support needed by students with different levels of English language proficiency.

6.2 What is the average time, and typical range of time, required by EAL students in New South Wales public schools to progress through phases of English language development?

A second key focus of the research was the question of how long it takes EAL students to move between phases of English language development. As the results from Part 2 analysis show, the answer to this question depended on which phases students were moving between. As students progressed along the English language progression, each successive phase took longer to achieve. For students starting school anytime between Kindergarten and Year 9, the median time for EAL students to progress from the Beginning to Emerging phase was 1 year and 1 month, from the Emerging to Developing phase was 1 year and 8 months and from the Developing to Consolidating phase was 2 years and 7 months. Importantly, our analysis also shows that there is often considerable variation in the time taken to progress through the phases, even among students with the same typical demographic profiles,[42] as evidenced by the typical ranges of time (time taken for the fastest 25% and 75% of students in each cohort analysed) reported in section 5.1.2. It is clear individual students varied in the times they took to progress from one phase to the next, so these median times need to be interpreted as an indication only of EAL students' likely rates of progression.

The research findings regarding the time taken to progress between phases are consistent with those from previous research. Outcomes from Demie's (2013) research, for example, confirm that the time taken progressively increases as students move from Beginning to more advanced phases of English development. However, no previous research has addressed the time taken for EAL students to progress between phases of ACARA's EAL/D Learning Progression. The current research thus provides new evidence that is directly relevant to the education of EAL students in Australian schools.

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42 From a technical sense, students holding typical demographic profiles mean those who have the average values for each of the demographic variables controlled for in the statistical model. See footnote 34 for more information.

The reason students took progressively longer time periods to progress to each subsequent phase is likely related to the nature of academic English. Earlier discussion in section 2 noted the distinction made by Cummins and others between conversational or playground English (BICS) and the more academic language required for educational learning (CALP). While the concepts of BICS and CALP provide somewhat simplified theoretical constructs, the distinction is conceptually useful and offers insights into these research findings. Students' initial progression from Beginning to Emerging levels of English primarily involves building fluency in playground English and initial English literacy (BICS), and hence students' progress is likely to be relatively fast. However subsequent progression to Developing and Consolidating levels of English requires engagement with spoken and written modes of language that are increasingly technical, abstract and metaphorical (CALP), and hence is likely to take more time. Descriptors in the EAL/D Learning Progression reflect the language and literacy demands faced by students as they move from one phase of English development to the next, between spoken and written modes of language and through schooling. As these descriptors reveal, while BICS and CALP both play a role in students' learning, CALP becomes increasingly significant in oral modes and especially in written modes of language in higher years of schooling. This is consistent with previous research which has identified that the distinction between conversational English and spoken and written academic language becomes greater as students progress through school (Creagh et al., 2019; Cummins, 2008; Hakuta et al., 2000).

6.3 What impact do specific characteristics of students and their experiences have on their language learning progress?

Learning English as an additional language is a complex process, and learners of English are similarly complex. They bring a wide variety of background experiences with them to school, and their learning is likely to be shaped by a wide range of factors.

This research investigated the impact of factors for which data was available. By doing so, it attempted to provide a more complete picture of how long it takes EAL students to develop the English they need. These factors included socio-educational advantage (SEA), age or starting year level, refugee experience, gender and school location. However, it is acknowledged that not all information about students was centrally collected (and, consequently, available for this research). The estimated impact of each factor presented in this report needs to be interpreted with this context in mind.

Also, while the factors considered here are discussed separately, it is important to note that many of them are not discrete constructs but are interrelated and overlapping aspects of a student's experience. This has 2 implications. Firstly, students' learning may be impacted by multiple factors at the same time (for example, a student may be a refugee and have low SEA) and the effect of this on their learning progress may be cumulative.[43] Secondly, the experiences that contribute to students' rate of learning may be complex (for example, a newly arrived refugee student may find settling in difficult but have a strong background in schooling from their previous or home country), making it difficult to pinpoint consistent causes of faster or slower progress. Consequently, the factors discussed in this section should be considered as part of a broader and more complex picture rather than single causes with easy explanations.

43   The time ratio for a student who has memberships of multiple characteristics should be calculated as the multiplication of the effects associated with each characteristic.

6.3.1 Socio-educational advantage

As section 5.2.2 shows, all else being equal, low levels of SEA (comprised of measures of parents' occupation, school and post-school education) were associated with students having slower progress in reaching the levels of English language and literacy development required for equitable participation in curriculum learning.

EAL students starting school at different phases of English consistently took longer to reach the Consolidating phase (or higher) when they had lower SEA. The extra time taken could be quite large. For example, across Kindergarten to Year 9 starters (i.e., EAL students starting school between Kindergarten and Year 9), students in the bottom 2 quarters of SEA (Q1 and Q2) progressed 22% slower than those in the top 2 quarters (Q3 and Q4).

The level of students' SEA is nationally recognised as a factor that impacts the educational progression of all students (see, for example, ACARA, 2023), but few studies have focused on the impact of SEA on EAL students' English language learning progression. The evidence from overseas studies regarding the impact of social and education advantage on language learning is mixed. For example, Hakuta et al. (2000) found that school poverty and students' level of family SES were correlated with rates of English language acquisition. However, Kieffer's (2008) study of EAL students from kindergarten to fifth grade in the United States found the effect of school poverty was less severe on growth trajectories in reading. Similarly, in their analysis of Welsh students aged between 4 and 16, Strand and Lindorff (2020) found no strong relationship between proficiency or progress in English and other demographic factors such as SES and gender.

The mixed findings from international literature suggest that defining and identifying the impact of social and educational advantage is complex and differs across contexts. However, the robust methods used in this research have shown that in New South Wales, SEA is an important factor for progress of EAL students.

6.3.2 Age or starting year level

The question of the optimal age to begin learning an additional language has generated much debate. As indicated in section 2.3, a number of researchers have consistently reported that students who are just beyond the initial years of schooling progress at a faster rate than those who are either very young or older (for example, Collier, 1987; Collier & Thomas, 2017; Creagh et al., 2019). Other researchers, however, have not found age to be a major factor in the rate at which students develop proficiency in academic English (Strand & Lindorff, 2020).

Findings from this study suggest that the age students enrol in school in Australia may be associated with faster or slower progress. Among all year groups, students starting school in New South Wales in Year 3 (median starting age = 8.3 years) seemed to progress faster than other younger or older cohorts of students with similar demographic characteristics. However, the differences were mostly small and not all were statistically significant.[44]

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44 Statistical tests comparing the Year 3 coefficient with that for any other year level were conducted. Results indicated that the coefficients for all year levels except Years 4 and 9 were significantly larger than that for Year 3 ($p<.01$ for K-2 and Year 5-8; $p=.06$ for Year 4; $p=.09$ for Year 9).

The strongest evidence for primary school students from this research indicates that students starting school in Kindergarten (median starting age = 5.2 years) take more time to develop the language skills to participate in curriculum learning than those starting in higher primary year levels (5% to 15% slower). For schools and teachers in the early primary years, this information can help identify the youngest students' needs and ensure that they are appropriately supported.

6.3.3 Refugee experience

In this research, having a refugee background was linked to slower progress towards developing the English language skills necessary to equitably participate in curriculum learning. Students who had been, or currently were, on a refugee visa progressed to the Consolidating phase (or higher) 14% slower than those who had not had refugee visas.

The finding that having a refugee background has the potential to impact students' progress is not surprising. For many students of refugee background, the pathway to settlement in Australia is long and complicated and they are likely to have experienced major disruptions and possible trauma in their lives. Depending on the specific circumstances of their families and broader communities in the countries refugees have fled from, refugee children may have experienced limited access to formal education and literacy development in their first language. When students with refugee backgrounds enter school in Australia, they must adjust to a new cultural environment and school system and begin learning an additional language while also working through the experiences that led to their refugee status. A number of recent publications and resources have addressed the specific needs of refugee students in Australian schools, and they offer positive as well as constructive advice for schools and teachers working with students of refugee backgrounds (Creagh, 2023; Hammond, 2018; Miller, 2015). More research, however, is needed to gain greater understanding of the factors at play specifically for refugee families, so that effective support can be directed to where it is most needed.

6.3.4 Gender

The findings of this research suggest that male EAL students take slightly longer to learn English than female students. Findings showed that across Kindergarten to Year 9, male students took 6% longer than females to progress to the Consolidating phase (or higher) of English. This difference, while statistically significant, is small, and may reflect the general tendency of female students to develop literacy skills at a faster rate than male students (for example, ACARA, 2023). However, Creagh (2023), in a sample of 232 students in an Australian intensive English school found no statistically significant relationship between gender and the length of support required by refugee and other newly arrived students. These differences in research findings may be due to variations in sample sizes, research methods and the characteristics of students studied, or other uncaptured factors that may explain gender-based learning gaps (if any) among the EAL students.

6.3.5 Factors related to the context of NSW DoE

Two factors related to the unique context of NSW DoE support of EAL students were found to have notable impacts on learning speed.

The geographical location of the school was found to be relevant to EAL students' rate of progression in English language learning. With all other factors being equal, EAL students starting school between Kindergarten and Year 9 residing in regional and remote areas took a shorter time to reach the Consolidating phase (or higher) than those residing in major cities. Specifically, the research showed that students residing outside major cities progressed at least 20% faster than those residing in cities. This is surprising, as many metropolitan schools have higher proportions of EAL students in their school populations and are, therefore, likely to have more established EAL support programs in place. This finding may be related to EAL students who are in regional and remote areas constituting a relatively small proportion of the total EAL population (3%) and potentially having different characteristics (e.g., cultural and linguistical backgrounds and resources) from those in the major cities that are not captured in this study. Further research is needed to understand the impact of EAL programs and other factors provided in different geographic locations.

Progress speed of students who participated in NSW DoE's New Arrivals Program was not statistically different compared to those who had not been part of the program. As mentioned in 2.4, the New Arrivals Program provides funding for additional staffing allocations for eligible students in primary and regional secondary schools. Eligible students meet all of the criteria set out in the operational guidelines, including being at the Beginning or Emerging phase and having enrolled in school within 6 months of arrival in Australia (or 18 months for Kindergarten students). Eligible students receive New Arrivals Program funding in addition to English language proficiency equity loading and Refugee Student Support (where relevant). According to NSW DoE:

> The funding provided by the New Arrivals Program allows schools to employ teachers to provide targeted support for newly arrived EAL/D students to develop their English language skills so they are able to access the curriculum, successfully participate in learning alongside their peers in mainstream classes, and engage confidently in the broader Australian community (NSW DoE, 2023, p. 3).

Given that students who were part of the New Arrivals Program did not progress slower than those that had not been eligible for the program, it could be argued that the New Arrivals Program was successful in supporting newly arrived students to overcome the initial challenges they faced.

6.4 Implications

As the discussion in this section has shown, the findings from this research contribute significant new knowledge relevant to the education of EAL students in Australia. They provide clear evidence of how long it takes EAL students who enter school in New South Wales public schools at different starting points to develop the level of English required to enable them to equitably participate in curriculum learning. The findings also provide evidence of the time that students can be expected to take to progress through the phases of the EAL/D Learning Progression, and the impact of some factors on their rate of progress in learning English. More broadly, this research has implicated the need for EAL students to be visible nationally and supported using effective teaching practices across programs, classes and schools; the knowledge teachers require and the assessment practices that will assist understanding student needs. The project has also identified areas in which further research is needed.

The following subsections discuss the implications for policy, practice and research that arise from this project.

6.4.1 Resourcing and support for EAL students in schools

This report showed that it often took a long time for EAL students in New South Wales public schools to learn the English skills necessary to equitably participate in curriculum learning – even with the resourcing and support from NSW DoE outlined in section 2.4. On average, it took students starting with Beginning levels of English at least 6 years of schooling to achieve parity with non-EAL peers and a substantial proportion of students took longer – some completed school without developing the level of language required to equitably participate in curriculum learning.

Given the risk to educational equity posed by the challenge of learning English for curriculum learning, this research highlights the need for EAL education to be appropriately resourced from the time students first enter school to when they have been assessed as no longer requiring language support. Similarly, given the risk, the research also points to the need for EAL students to be consistently supported according to best practices in EAL education across programs, classes and schools.

Further, given the finding related to the slower progress of Kindergarten students in New South Wales public schools (5-year-olds) compared to other primary year levels, consideration should be given to the provision of EAL resources and EAL practices provided at this year level.

6.4.2 Knowing EAL students

This research found that specific demographic factors had a significant impact on the rate at which EAL students learned English. These factors included students' level of socio-educational (dis)advantage, their migration experiences and their gender as well as the geolocation of the school. These findings emphasise the potential influences on language learning and point to the importance for teachers and schools of knowing as much about their students as possible.

Systematic procedures that collect and communicate relevant information can support teachers and other staff in knowing EAL students. With access to sufficient information about their students, teachers can be well-placed to understand students' backgrounds, strengths and potential needs. Furthermore, given the length of time language learning takes, information sharing about EAL students should occur within and between schools to facilitate continuity of support as students move between programs, classes and schools.

6.4.3 Professional support for teachers

Similar to knowing about EAL students, teachers should understand the processes of language development and how to plan and implement programs that support their EAL students. A major implication of the research, therefore, is the importance of relevant professional support for teachers. This professional support needs to address:

- **knowledge about language**, including the relationship between everyday conversational and academic language, the relationship between oracy and literacy, and the increasingly abstract nature of the academic language that students encounter as they progress through school
- **knowledge of how students learn an additional language**, including time typically required by students to progress from one phase of language development to the next
- **knowledge of how to plan and implement programs** that support students' English development as well as their understanding of the curriculum.

Australia has a strong tradition of research and resource development in the field of EAL education. Professional support programs need to ensure that schools and teachers are familiar with and have access to the range of quality EAL resources available in Australia.

6.4.4 Supporting EAL students to continue using and developing their first languages

An important finding in this report is that students who enrolled in New South Wales public schools with Consolidating levels of English were at an educational advantage, consistently outperforming their monolingual peers in NAPLAN reading and writing tests, and, generally, on a trajectory of more rapidly increasing performance in the tests. These students were arguably bi- or multi-lingual students – that is, proficient in a first language or multiple languages as well as consolidating their skills in English. This finding is consistent with outcomes from previous research, especially from North America, which show the cognitive and linguistic advantages of bi- and multilingualism (Cummins, 1991).

In contrast to common perceptions that EAL students should only use English at school, bilingual programs (programs that teach curriculum in more than one language), are advantageous for bi- and multilingual students (Collier & Thomas, 2017; Cummins, 1984, 1991; Hornberger, 2003; Ramirez et al., 1991). While there are limited opportunities in Australia for bilingual programs, the advantages of bilingual education can be accessed when teachers and schools recognise EAL students' linguistic resources as strengths and build on them while supporting their English language learning. Specifically, best practice EAL and mainstream programs should encourage and support EAL students to continue using and developing their first and other languages.

6.4.5 National status and visibility of EAL students

Despite the advantages of becoming bilingual, EAL students face the considerable challenge of engaging with curriculum concepts while learning the language they need to engage with those concepts. This research has provided clear evidence that it takes a long time for EAL students to equitably access the curriculum and that English language is important for educational equity. The previous sections have pointed to the importance of appropriate resourcing and best practice EAL teaching and learning to ameliorate inequity, however, actions nationally are also implicated.

The specific needs of EAL students should be high profile and visible but current reporting does not allow for the monitoring of this group of students with specific English language learning needs (ACTA, 2022; ACARA, 2022b; Australian Government DoE, 2023; Creagh, 2014; Lingard et al., 2012; Merga, 2019). For example, EAL/D students are not currently recognised as an equity group in the Measurement Framework for Schooling in Australia (ACARA, 2020). Instead, they are hidden with other students from language backgrounds other than English who may not face the same challenge of learning English at the same time as learning the curriculum (Creagh, 2014). Indeed, in late 2023, the Expert Panel of the independent Review to Inform a Better and Fairer Education System recommended identifying and defining priority groups clearly by replacing the LBOTE category with the more accurate EAL/D category (Australian Government DoE, 2023).

Recognition of EAL/D students as a national priority group will raise the visibility and priority accorded to this student group. It will also encourage ongoing monitoring of their learning progress and provide a strong basis for reviewing the resources and support available for EAL education. Also, teachers may be more aware of the principles of EAL education as well as available resources and be supported to use them. This research, by providing a clear evidence base of time and processes involved in learning an additional language, provides strong justification for raising the profile of EAL students in Australian schools.

6.4.6 Effective school practices

The findings from this research show that there is considerable variability in the typical range of time required by EAL students to develop their English language skills – often, with gaps between the 25th and 75th percentiles as wide as 3 years. Part of this variability can be attributed to uncaptured differences in students' backgrounds, such as their levels of proficiency in their first languages and prior schooling experiences. However, other potential explanations include the varying quality of EAL support available to students across schools.

Effective EAL programs provide EAL students with targeted and explicit support in their development of English language and literacy and in their development of curriculum knowledge (Gibbons, 2015; Hammond & Miller, 2015; Harper & Feez, 2020). Developing and implementing well-planned programs with this focus is challenging, but Australia has a strong and internationally recognised history of supporting EAL education, and schools and teachers are well-placed to develop such programs.

Specifically, schools and teachers have access to substantial research-informed resources that have been developed to support their work with EAL students. Recent research by NSW DoE (CESE, 2021a) is an example of these resources. The Effective Practices research highlights principles of effective classroom practices that include the need for teachers to identify the language foci within curriculum content, to articulate clear goals and success criteria for each lesson, and to plan and implement targeted scaffolding to support students' learning success. It highlights the role of talk in learning and the importance of providing students with opportunities to develop their oracy as well as literacy in English. It reports on the value for teachers of using assessment evidence to inform their teaching and learning practices and of participating in professional learning to deepen their understanding of what works for EAL students.

The Effective Practices research also emphasises the importance of a positive respectful school culture supported by school leaders who view cultural and linguistic diversity as strengths (CESE, 2021a). In line with other relevant resources, the Effective Practices research emphasises the importance of cohesive whole-school approaches to EAL education where students feel valued and safe, and where their learning pathways progress from one year to the next. It also highlights the importance of carefully planned programs where students understand what they are learning and why, where they are challenged intellectually, but also where they are provided with high levels of targeted support, and where the role of language in learning is recognised.

Findings from the Effective Practices research in NSW (CESE, 2021a) are consistent with other Australian-based research, including the Successful Language Learners (Australian Government Department of Education, Employment and Workplace Relations, 2011) and Classrooms of Possibility projects (Hammond, 2018), as well as findings from international researchers who have linked effective EAL pedagogy with students' learning outcomes (Ellis, 2009; Ortega, 2015). The Effective Practices research also is complementary to AERO's model of learning and teaching, which describes teaching practices aligned with how students learn, including explicit teaching, provision of frequent guidance, feedback and opportunities to practice, and a supportive, culturally safe learning environment.

This combined body of research provides a strong evidence base for the effectiveness of well-planned EAL programs. Yet despite access to relevant research and quality resources, and despite a strong tradition of support for EAL students in Australian schools, the findings from this research show that there is considerable variability in the typical range of time required by EAL students to develop their English language skills, even among those with the same demographic profiles. These findings likely suggest the need for a renewed emphasis on principles of EAL pedagogy, and on what EAL programs that provide targeted and explicit support look like in Australian schools. They may also suggest the need for further support for the professional development of Australian teachers so that all EAL students, regardless of their backgrounds and where they enrol, can progress their language learning and achieve educational goals as fast as possible.

6.4.7 Teacher knowledge about language learning

This research identified the importance of language for equitable participation in curriculum learning. As previous researchers have argued, it is not possible for EAL (or other) students to engage with advanced curriculum concepts without also learning the discipline-specific language required to talk, read and write about those concepts (Christie & Derewianka, 2008; Jones & Derewianka, 2023; Lemke, 1990). It is important, therefore, for teachers to understand the nature of academic language, and to be able to draw on this understanding, as they plan and implement programs that address the specific needs of their EAL students.

For teachers to support their EAL students, they, therefore, need to go beyond the BICS/CALP distinction and engage with the roles of oracy and literacy development in learning, and the increasing complexity of language that students encounter as they progress through school. This requires an understanding of discipline-specific vocabulary, as well as distinctive patterns of grammar and texts that differ from those of everyday conversational language (Gibbons, 2009). It also requires teachers to support students in developing the language that enables them to review and explain concepts, explore and hypothesise, generalise and transform information, and build cumulatively on prior learning (Hammond, 2018). In Australia, however, there is consistent evidence that, beyond the level of vocabulary development, many teachers lack confidence in their own knowledge of language. As a result, they can also lack confidence in their ability to support their EAL (and other) students as needed in their development of academic language and literacy (Jones & Chen, 2012; Watkins et al., 2013).

Teacher knowledge of language learning can also prevent misunderstandings of students' educational abilities and achievement profiles. As Cummins (1980, 1984) pointed out many years ago, where the nature of academic language is not understood, EAL students' apparent fluency in conversational English may be misinterpreted as evidence of full fluency in all aspects of English. If this occurs, any evidence of EAL students' lack of educational progress is likely to be misdiagnosed as lack of academic ability. While some EAL students do experience learning difficulties, it may be that students simply have not yet attained sufficient levels of academic English to participate in curriculum learning in the same ways as their non-EAL peers.

Teacher knowledge of language learning can be developed and supported through professional support for teachers – for example, in the forms of professional learning and pre-service education. Australia has a strong tradition of research and resource development in the field of EAL education. Professional support programs need to ensure schools and teachers are familiar with and have access to the range of quality EAL resources available in Australia. Teacher education should also include how students learn an additional language, including the time typically required by students to progress from one phase of language development to the next until they no longer need support.

6.4.8 Ongoing assessment to understand student needs

This research utilised NSW DoE's consistent assessment and reporting practices (using the ACARA EAL/D Learning Progression) to yield important new knowledge about how students progress in their language learning during schooling from different starting levels of English proficiency. Each EAL student being assessed and reported on according to the phases of English language development enabled a relatively consistent classification of student proficiency across schools and time. In addition, being a national resource, insights related to learning phases are likely to be transferrable to other states and territories that use the ACARA EAL/D Learning Progression and/or enrol EAL students of similar characteristics to New South Wales's. In these ways, the research showed the value of consistent assessment of EAL students' English proficiency upon entry to school and at regular intervals to monitor student progress for the purposes of understanding and responding to the changing needs of EAL students.

In addition to formal processes of assessment, schools and teachers need to work with other informal assessment processes to monitor their EAL students' ongoing progress in relation to specific curriculum goals. Regardless of what state-based proficiency measure is being used, mis- and under-identification of the support needed by EAL students can be prevented by regular and consistent assessment of students' language skills and their understanding of curriculum concepts.

6.4.9 Areas for future research

Several areas for future research have been identified through this project.

Firstly, research on the English language learning of First Nations EAL/D students in Australian schools is important and should be undertaken in the future by or with First Nations researchers. This project did not include students who have English as an additional dialect, who, in Australia, are largely First Nations students.

A second area of future research identified through this project is how English language learning in school is experienced by subgroups of EAL students, including the difference in experiences of metropolitan, and regional and remote EAL students and the impact of SEA and the refugee experience on learning progress. The survival analysis in Part 2 found that residing in major cities is likely to be associated with slower progression in English than in the regional areas, and that low SEA and the refugee experience were also related to slower progression. The driving factors behind these findings are unclear and should be further investigated. The intersections between EAL students' English language development and other characteristics, such as disability, should also be investigated.

Third, the differences in language development of EAL students compared to their non-EAL peers in reading versus writing would benefit from further investigation. The finding that EAL students equitably accessed the curriculum in writing faster than reading suggests that there is potential for guiding improved practice in supporting EAL students in reading and how to best do this should be explored.

Finally, the question of how long EAL students take to learn English should be investigated in other states and territories of Australia and in non-government schools. Further research would build a broader evidence base in the Australian context and address the extent to which findings from this research could be generalised to other states and territories.

7. Conclusion

The findings from this research contribute significant new knowledge about:

- how long it takes Australian students who are learning English as an additional language to equitably participate in curriculum learning from various starting points
- student progress through the phases of the ACARA's EAL/D Learning Progression
- the demographic factors associated with slower progress.

These findings have implications for how EAL education is prioritised, planned for, implemented and resourced in Australian schools.

The research has highlighted the need for EAL support to be ongoing and to acknowledge the typical length of time it takes students to reach parity with their non-EAL peers and participate equitably in curriculum learning. Given the risk to educational equity posed by the challenge of learning English, students should be consistently supported according to best practices in EAL/D education across programs, classes and schools.

This research suggests a need for consistent identification, monitoring and reporting on students who require EAL support at school, system and national levels, including identification of EAL students as a subgroup with distinct and specific needs. At the same time, it has provided evidence of the benefits of bi- and multilingualism, and the need to support students with continuing to use and develop their first languages in EAL and mainstream programs.

This research has pointed to the importance of teachers knowing their students, supported by systematic information collection and sharing processes within and between schools. Teacher support should also include professional development and resources that develop teachers' knowledge about the nature of academic language, processes of language learning and procedures for assessing and monitoring EAL students' language development.

Addressing these implications will ensure that EAL/D students receive the instruction and support they require based on their learning needs and contribute to equitable educational outcomes for all Australian students.

Appendix A: Information about the data used in this project

A.1 NAPLAN data received from the NSW Department of Education

Each student's test record includes:

- calendar year when the test was taken
- schooling year level
- participation status, NAPLAN scale score, indicators of results below/at/above National Minimum Standard (NMS) for reading, writing and numeracy
- years enrolled to test
- school IDs and student IDs (both de-identified)
- school remoteness, whether the school is fully, partially or non-selective
- gender, refugee status, First Nations status, parental education backgrounds, parental occupations, country of birth, month and year of birth
- SEA score, associated SEA quarter
- EAL/D phase on the EAL/D Learning Progression at the time of testing.

A.2 EAL/D Annual Survey data received from the NSW Department of Education

The variables for each student record include:

- calendar year when the survey was administered (CALYEAR)
- schooling year level
- Student ID (de-identified) and student record order
- gender, refugee status, First Nations status, New Arrival Program (NAP) status, SEA score, associated SEA quarter
- EAL/D phase based on the EAL/D Learning Progression on EAL/D census day
- current School ID on EAL/D census day and previous School ID on EAL/D census day the previous year (CALYEAR - 1) if student was enrolled in different school to current year
- school types of current school and previous schools
- first Australian school enrolment date, first New South Wales public school enrolment date and first enrolment grade.

A.3 School mobility data

Variables include:

- calendar year of the school record
- School ID
- school mobility, school type, school year range (e.g., K to 6, K to 12, 7–10, 7–12, etc.)
- flag indicating whether the school provides distanced education
- flag indicating whether the school is attached to an Intensive English Centre (IEC).

A.4 Data dictionary

Table A1 provides more information about the key variables referred to in this report:

Table A1: Data dictionary of key variables

Variable	Source	Level of measure	Note
SEA	Enrolment forms	student	SEA score is generated by CESE annually using information such as parental education and parental occupations, using a method similar to that used for the SEA scores generated by ACARA for national reporting. For more information about the generation method, see ACARA's technical report.
SEA quarters	Enrolment forms	student	SEA quarter describes the quarter where an SEA score lies. It is calculated annually by CESE based on the percentiles of the student SEA scores.
Refugee status	EAL/D Annual Survey	student	This variable describes if a student has a refugee background. A student has a refugee background if they currently are or have previously been on a refugee visa on the EAL/D census date.
New arrival status	EAL/D Annual Survey	student	This variable indicates if a student was ever included in a New Arrivals Program. In New South Wales government schools, students are identified as new arrivals (thus eligible for New Arrivals Program funding) if the students are newly arrived in Australia and speak a language other than English as their first language; require on-arrival, initial intensive English language support as they are assessed at the Beginning or Emerging phase of English language proficiency against the ACARA EAL/D Learning Progression; have enrolled in their first school in Australia within 6 months of arrival, or within 18 months of arrival for Kindergarten students; have enrolled in an Australian school for the first time, or have transferred schools within 6 months of first enrolment. For more information, see the NSW Department of Education New Arrivals Program Operational Guidelines 2023.

Variable	Source	Level of measure	Note
Years enrolled to test	NAPLAN data file	student	This variable represents the number of years enrolled to NAPLAN test from first Australian school enrolment date. Australian school enrolment date is sourced from information provided by parents on enrolment forms. 1 May of the NAPLAN test calendar year is used as the NAPLAN test date in this analysis.
School mobility rate	School mobility data file	school	School mobility rate is calculated by CESE annually. School mobility refers to the rate of student enrolment turnover in a school over a year. Higher rate indicates higher mobility.
School type	School mobility data file	school	Typical types of school include primary school, secondary school, central/community school, infants school and schools for specific purposes.

Appendix B: Part 1 technical details of propensity score matching

Propensity score matching is the technique that was used in the Part 1 analysis to match EAL and non-EAL students with similar characteristics and demographics. Matching is required because some of the observable characteristics – such as SEA – are 'confounding' factors. This means that these characteristics are associated with both English proficiency level as well as NAPLAN performance. Students with lower English proficiency performed lower than those at a higher English proficiency level. This is demonstrated on Figure B1(a). The average NAPLAN reading performance by EAL status (including non-EAL students) for the Year 3 2015 cohort, who were tracked from Year 3 to Year 9, reveals that students with higher English language proficiency performed better in the NAPLAN reading test. Similarly, students with higher SEA also performed better than students with lower SEA as shown in Figure B1(b). The demographics reported in Appendix C (Tables C1 to C3) show that Beginning and Emerging students, who have lower English proficiency, tended to have lower SEA. If we simply compared the NAPLAN performance between Beginning/Emerging students and non-EAL students without accounting for the difference in their SEAs, the difference in their performances would be 'confounded' by the fact that Beginning/Emerging students were likely to be from lower SEA background and, therefore, were performing lower.

Figure B1: NAPLAN reading performances by EAL status (including non-EAL students) and SEA quarters for the Year 3 2015 cohort

B1(a) NAPLAN reading score
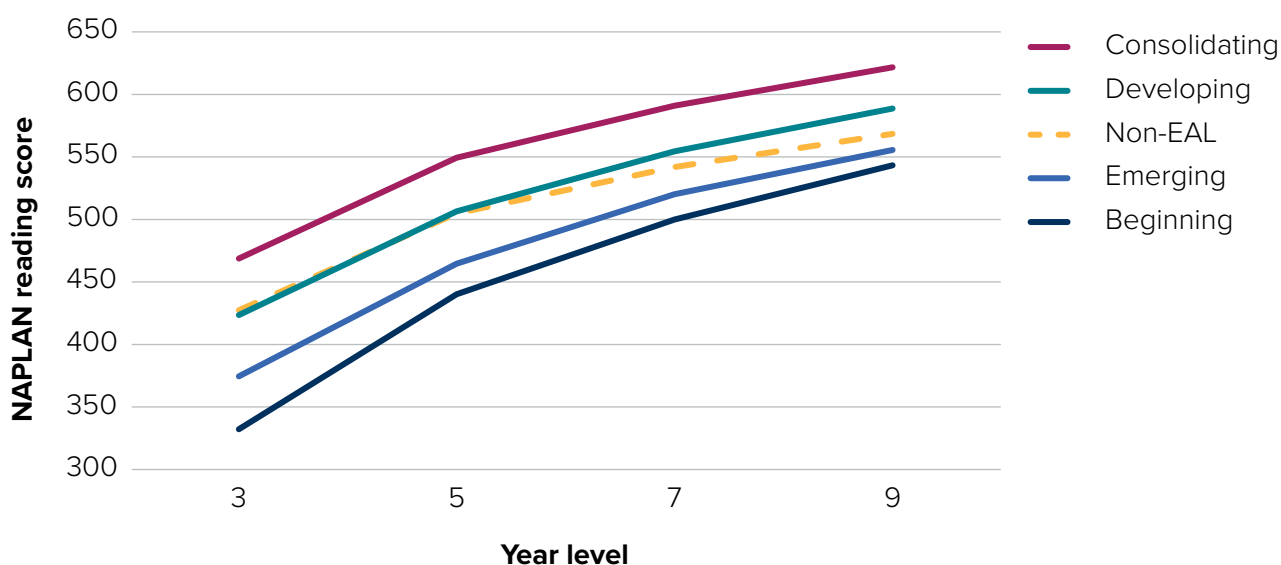
B1(b) NAPLAN reading score
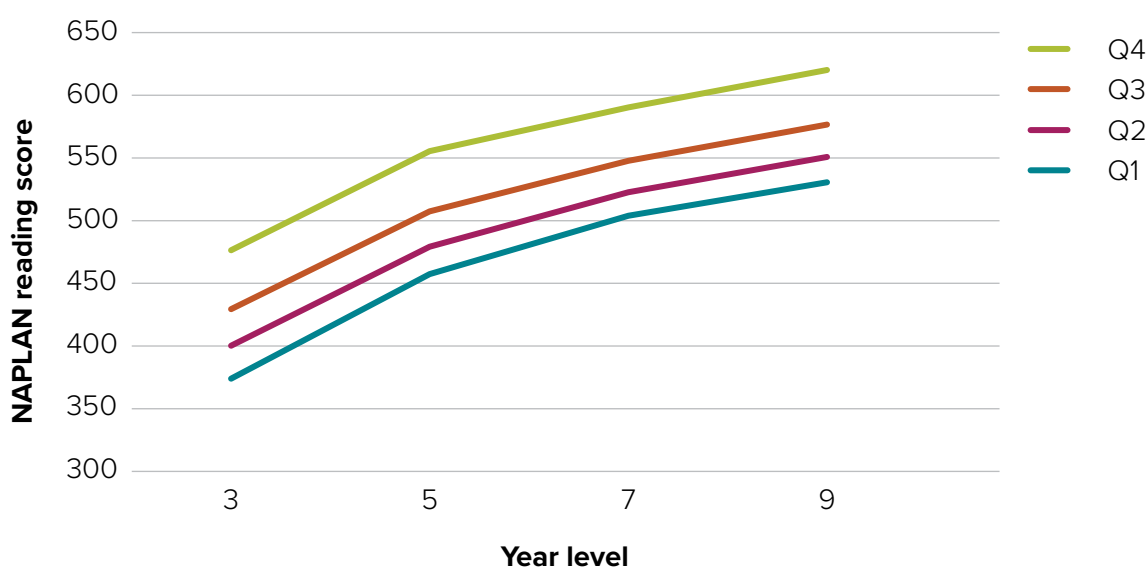
One-to-one nearest neighbour matching without replacement was implemented in this analysis to match the EAL and non-EAL students based on all available observable characteristics. One EAL student is matched to a non-EAL student with very similar characteristics. Once a non-EAL student is matched, this student can no longer be matched with other EAL student. By doing so, an EAL group and a non-EAL group of matched students that are more homogeneous would be formed. After matching, the difference in any observable characteristics (e.g., SEA) between the EAL and non-EAL groups becomes minimal. Hence, these characteristics would no longer have any impact on the NAPLAN performance. As a result, the bias in the difference between the NAPLAN performances of the 2 matched groups due to the confounding factors would be reduced.

The technical details of the propensity score matching and diagnostic checking can be summarised as:

Step 1
Combine small EAL subgroup (e.g., Beginning students) with the adjacent EAL subgroup (e.g., Emerging students) to make sure the sample size of the EAL group is greater than 500.

Step 2
Fit a logistic regression on the binary indicator (Y) of whether a student is an EAL (Y=1) or non-EAL student (Y=0), including all observable characteristics in the data. For each student, calculate the propensity score (probability P[Y=1], ranging from 0 to 1) of being an EAL student based on all observable characteristics.

Step 3
Match an EAL student with a non-EAL student with the closest propensity score where the difference in the propensity score is required to be within a caliper (a pre-set value). After matching, the non-EAL students would not be used for matching again.

Step 4
Check whether the variables included in the logistic regression model are 'balanced'. A variable is balanced when the distribution or average of the variable between the EAL and non-EAL groups is very similar. The covariate balance is assessed for each variable based on 2 criteria:

    a. standardised percentage bias, which is defined as the difference of the means in the 2 matched groups divided by the square root of the average of the sample variances in the 2 matched groups (Rosenbaum & Rubin, 1985), is less than 0.5 (Caliendo & Kopeinig, 2008)

    b. t-test for equality of means between the 2 matched groups has a p-value greater than 0.05.

Step 5
Perform repeated measures ANOVA to estimate the mean of student performance in NAPLAN reading and writing in each NAPLAN test round for the matched EAL and non-EAL groups.

Step 6
Conduct statistical tests to test the difference in the NAPLAN performance between the EAL group and non-EAL groups at each NAPLAN test round.

Appendix C: Part 1 student characteristics

C.1 Part 1 Cohort 1 student characteristics before and after matching

Analysis Cohort 1 consists of the Year 3 2015 student cohort in which students enrolled in Australian schools before 1 May 2015. Prior to matching, Analysis Cohort 1 consisted of 22,827 non-EAL students and 10,270 EAL students.

One-to-one nearest neighbour matching was conducted separately for the:

- combined Beginning and Emerging students
- Developing students
- Consolidating students.

After matching, the number of EAL students in all phases was reduced because some EAL students had characteristics that could not be matched to any non-EAL students.

After matching, covariate balance was achieved on all observable characteristics across all phases, meaning that the demographics of the matched EAL subgroup and non-EAL group had very similar demographics and characteristics.

The numbers of EAL students in each phase who were able to be matched with like non-EAL students are reported in Table C1, together with the characteristics of the EAL students before and after matching.

Table C1: Characteristics of the non-EAL students and EAL students in Year 3 for Analysis Cohort 1 before and after matching

Variables	Category	Non-EAL	Beginning/Emerging			Developing			Consolidating		
		Prior to matching (n=22,827)	Prior to matching (B/E) (n=2,024)	Matched (B/E) (n=957)	Matched Non-EAL (n=957)	Prior to matching (D) (n=5,737)	Matched (D) (n=3,218)	Matched Non-EAL (n=3,218)	Prior to matching (C) (n=2,509)	Matched (C) (n=1,731)	Matched Non-EAL (n=1,731)
Student-level characteristics (%)											
Gender	Male	51.25	55.58	52.98	52.46	51.91	50.37	50.47	48.35	47.66	47.83
	Female	48.75	44.42	47.02	47.54	48.09	49.63	49.53	51.65	52.34	52.17
SEA	Mean	8.39	7.70	8.04	8.05	8.50	8.74	8.69	9.49	9.46	9.48
	Standard deviation (SD)	2.47	2.71	2.52	2.51	2.64	2.46	2.46	2.48	2.45	2.43
Age at Year 3 NAPLAN	Mean	8.62	8.44	8.43	8.43	8.42	8.45	8.44	8.46	8.49	8.49
	SD	0.35	0.38	0.31	0.31	0.34	0.30	0.30	0.34	0.31	0.31
Years enrolled to Year 3 NAPLAN test	Mean	3.24	2.93	3.25	3.24	3.18	3.24	3.25	3.22	3.26	3.25
	SD	0.54	0.83	0.29	0.24	0.53	0.25	0.21	0.45	0.27	0.29

Variables	Category	Non-EAL Prior to matching (n=22,827)	Beginning/Emerging			Developing			Consolidating		
			Prior to matching (B/E) (n=2,024)	Matched (B/E) (n=957)	Matched Non-EAL (n=957)	Prior to matching (D) (n=5,737)	Matched (D) (n=3,218)	Matched Non-EAL (n=3,218)	Prior to matching (C) (n=2,509)	Matched (C) (n=1,731)	Matched Non-EAL (n=1,731)
School-level characteristics (%)											
Remoteness	Major cities of Australia	67.26	98.22	98.01	97.60	98.87	98.57	98.51	98.29	97.92	97.92
	Inner regional Australia	25.39	1.48	1.57	1.67	0.85	1.06	1.15	1.32	1.73	1.68
	Outer regional Australia	6.99	0.30	0.42	0.73	0.28	0.37	0.34	0.40	0.35	0.40
	Remote Australia	0.29	0	0	0	0	0	0	0	0	0
	Very remote Australia	0.07	0	0	0	0	0	0	0	0	0

Note: B/E denotes 'Beginning/Emerging', D denotes 'Developing', C denotes 'Consolidating'.

C.2 Part 1 Cohort 2 student characteristics before and after matching

Analysis Cohort 2 consists of 3 Year 5 (2014, 2015 and 2017) student cohorts enrolled in Australian schools after 1 May in Year 3 and before 1 May in Year 5. This cohort of students participated in the Years 5, 7 and 9 NAPLAN tests. They were slightly older than those in Analysis Cohort 1 when they first enrolled in Australian schools.

Prior to matching, Cohort 2 consisted of 1,718 EAL students and 1,410 non-EAL students. The proportions of students across the 4 phases are 9% (Beginning), 35% (Emerging), 41% (Developing) and 15% (Consolidating). Due to the relatively small sample sizes of Beginning and Consolidating students, one-to-one nearest neighbour matching was conducted for the Beginning and Emerging students combined and the Developing and Consolidating students combined.

After matching, covariate balance was achieved on all observable characteristics. The number of EAL students who were able to be matched to a non-EAL student is reported in Table C2, together with the characteristics of the EAL students before and after matching.

Table C2: Characteristics of the non-EAL students and EAL students in Year 5 for Analysis Cohort 2 before and after matching

Variables	Category	Non-EAL	Beginning/Emerging			Developing/Consolidating		
		Prior to matching (n=1,410)	Prior to matching (B/E) (n=750)	Matched (B/E) (n=545)	Matched Non-EAL (n=545)	Prior to matching (D/C) (n=968)	Matched (D/C) (n=610)	Matched Non-EAL (n=610)
Student-level characteristics (%)								
Gender	Male	50.43	53.87	52.84	53.58	51.24	49.02	49.84
	Female	49.57	46.13	47.16	46.42	48.76	50.98	50.16
SEA	Mean	8.84	7.96	8.96	8.90	9.48	9.46	9.54
	SD	2.42	2.95	2.48	2.39	2.55	2.46	2.38
Age at Year 3 NAPLAN	Mean	10.66	10.60	10.61	10.61	10.50	10.56	10.55
	SD	0.38	0.45	0.44	0.39	0.41	0.40	0.37
Years enrolled to Year 3 NAPLAN test	Mean	0.76	1.01	0.94	0.94	1.12	1.00	1.00
	SD	0.86	0.58	0.55	0.60	0.58	0.56	0.58
School-level characteristics (%)								
Remoteness	Major cities of Australia	56.03	96.00	95.96	95.96	97.00	96.07	95.90
	Inner regional Australia	32.34	3.47	3.30	3.12	2.58	3.28	3.44
	Outer regional Australia	10.50	0.53	0.73	0.92	0.41	0.66	0.66
	Remote Australia	0.50	0	0	0	0	0	0
	Very remote Australia	0.64	0	0	0	0	0	0

Note: B/E denotes 'Beginning/Emerging', D/C denotes 'Developing/Consolidating'.

C.3 Part 1 Cohort 3 student characteristics before and after matching

Analysis Cohort 3 consists of 5 Year 7 cohorts of students from 2014 to 2019 (but not the 2018 cohort who did not sit Year 9 NAPLAN test in 2020 when it was cancelled due to COVID-19). These students were the oldest of the 3 cohorts when they began school in New South Wales. As a result, they completed only 2 NAPLAN tests in Years 7 and 9.

Prior to matching, Analysis Cohort 3 consisted of 2,469 EAL students and 5,027 non-EAL students. The proportions of students across the 4 phases are 11% (Beginning), 39%, (Emerging), 32% (Developing) and 18% (Consolidating).

One-to-one nearest neighbour matching was conducted separately for the Beginning and Emerging students combined and Developing and Consolidating students combined. After matching, covariate balance was achieved on all observable characteristics after matching. The number of EAL students who were able to find a matched non-EAL student is reported in Table C3 together with the characteristics of the EAL students before and after matching.

Table C3: Characteristics of the non-EAL students and EAL students in Year 7 for Analysis Cohort 3 before and after matching

Variables	Category	Non-EAL	Beginning/Emerging			Developing/Consolidating		
		Prior to matching (n=5,207)	Prior to matching (B/E) (n=1,243)	Matched (B/E) (n=538)	Matched Non-EAL (n=538)	Prior to matching (D/C) (n=1,226)	Matched (D/C) (n=891)	Matched Non-EAL (n=891)
Student-level characteristics (%)								
Gender	Male	51.66	54.30	53.90	53.35	51.06	51.07	50.28
	Female	48.34	45.70	46.10	46.65	48.94	48.93	49.72
SEA	Mean	8.81	7.90	8.83	8.81	9.30	9.44	9.33
	SD	2.29	2.91	2.41	2.49	2.58	2.43	2.49
Age at Year 3 NAPLAN	Mean	12.69	12.78	12.70	12.71	12.60	12.60	12.61
	SD	0.37	0.52	0.48	0.42	0.46	0.47	0.41
Years enrolled to Year 3 NAPLAN test	Mean	0.48	1.16	0.98	1.01	1.11	1.04	1.07
	SD	0.56	0.52	0.52	0.59	0.58	0.55	0.55
School-level characteristics (%)								
Remoteness	Major cities of Australia	44.20	92.92	89.22	86.99	95.19	93.83	92.37
	Inner regional Australia	37.58	6.28	9.29	9.85	3.51	4.49	5.84
	Outer regional Australia	15.74	0.80	1.49	3.16	1.22	1.57	1.80
	Remote Australia	2.25	0	0	0	0.08	0.11	0
	Very remote Australia	0.24	0	0	0	0	0	0

Note: B/E denotes 'Beginning/Emerging', D/C denotes 'Developing/Consolidating'.

Appendix D: Starters' characteristics

D.1 Kindergarten starters' characteristics

In Part 2 analysis, Kindergarten starters included 52,154 Beginning, 34,639 Emerging and 11,736 Developing students from 6 (2014 to 2019) cohorts who met the selection criteria specified in 3.3.1 Step 1: Identify EAL student groups for analysis. Contrary to the NAPLAN dataset analysed in Part 1, more than half of the Kindergarten starters in the EAL/D Annual Survey data were in the Beginning phase. Table D1 shows the characteristics of Kindergarten starters in mid-Kindergarten breaking down by starting phases.

Table D1: Characteristics of Kindergarten starters at mid-Kindergarten

Variables	Category	Beginning	Emerging	Developing
Number of students	All	52,154	34,639	11,736
Gender	Female	47%	50%	51%
	Male	53%	50%	49%
Refugee status	Non-refugee	96%	99%	99%
	Previously or currently on a refugee visa	4%	1%	1%
New arrival status (current or historical)	No	88%	95%	97%
	New arrival to Australia	12%	5%	3%
School remoteness	Major cities of Australia	97%	98%	97%
	Inner regional Australia	1%	1%	2%
	Outer regional Australia	0.4%	0.4%	1%
	Remote/Very remote Australia	0.01%	0.02%	0.1%
	Unknown	1%	0.2%	0.3%
Starting age in Australian schools	Mean	5.12	5.17	5.20
	SD	0.35	0.34	0.34
Average student SEA	Mean	8.88	9.50	9.95
	SD	2.68	2.47	2.31
Average school mobility	Mean	20.92	19.93	19.25
	SD	7.36	7.40	6.81

D.2 Years 1 and 2 starters' characteristics

Years 1 and 2 starters in the Part 2 analysis consisted of 2,415 Beginning, 1,402 Emerging and 606 Developing students. More than half of these starters commenced in the Beginning phase. Compared to the Year 2 starters, Year 1 starters were more likely to have commenced in the Beginning and Emerging phases.

Table D2 shows the characteristics of Years 1 and 2 starters in the middle of their starting year levels.

Table D2: Years 1 and 2 starters' characteristics in the middle of their starting year levels

Variables	Category	Beginning	Emerging	Developing
Number of students	All	2,415	1,402	606
Starting Year level	Year 1	60%	58%	45%
	Year 2	40%	42%	55%
Gender	Female	46%	50%	46%
	Male	54%	50%	54%
Refugee status	Non-refugee	82%	97%	99%
	Previously or currently on a refugee visa	18%	3%	1%
New arrival status (current or historical)	No	12%	28%	41%
	New arrival to Australia	88%	72%	59%
School remoteness	Major cities of Australia	93%	96%	97%
	Inner regional Australia	5%	3%	3%
	Outer regional Australia	1%	1%	0.2%
	Remote/Very remote Australia	0.1%	0%	0.0%
	Unknown	0.2%	0.1%	0.2%
Starting age in Australian schools	Mean	6.79	6.70	6.82
	SD	0.67	0.64	0.62
Average student SEA	Mean	8.72	10.00	10.17
	SD	2.92	2.29	2.18
Average school mobility	Mean	22.95	22.91	22.17
	SD	7.33	7.88	7.65

D.3 Years 3 to 6 starters' characteristics

Years 3 to 6 starters in the Part 2 analysis consisted of 2,447 Beginning, 1,598 Emerging and 1,233 Developing students. 46% of these starters commenced in the Beginning phase. Compared to the Years 3 to 5 starters, the proportion of Year 6 starters commencing at the Developing phase was higher. Table D3 shows the characteristics of Years 3 to 6 starters in the middle of their starting year levels.

Table D3: Years 3 to 6 starters' characteristics in the middle of their starting year levels

Variables	Category	Beginning	Emerging	Developing
Number of students	All	2,447	1,598	1,233
Starting Year level	Year 3	34%	34%	29%
	Year 4	28%	26%	27%
	Year 5	25%	24%	26%
	Year 6	14%	16%	18%
Gender	Female	46%	46%	49%
	Male	54%	54%	51%
Refugee status	Non-refugee	73%	95%	98%
	Previously or currently on a refugee visa	27%	5%	2%
New arrival status (current or historical)	No	7%	15%	30%
	New arrival to Australia	93%	85%	70%
School remoteness	Major cities of Australia	92%	93%	96%
	Inner regional Australia	6%	5%	3%
	Outer regional Australia	2%	1%	1%
	Remote/Very remote Australia	0.1%	0.1%	0%
	Unknown	0.04%	0%	0%
Starting age in Australian schools	Mean	9.68	9.57	9.60
	SD	1.20	1.24	1.18
Average student SEA	Mean	7.67	9.39	9.85
	SD	3.01	2.47	2.36
Average school mobility	Mean	23.19	22.22	21.22
	SD	7.34	6.66	6.68

D.4 Years 7 to 9 starters' characteristics

In Part 2 analysis, Years 7 to 9 starters included 1,964 Beginning, 505 Emerging and 436 Developing students. More than two-thirds of these starters commenced in the Beginning phase. Compared to the Years 7 and 8 starters, a smaller proportion of the Year 9 starters commenced in the Beginning phase and a larger proportion commenced in Emerging phase. Table D4 shows the characteristics of Years 7 and 9 starters in the middle of their starting year levels.

Table D4: Years 7 to 9 starters' characteristics in the middle of their starting year levels

Variables	Category	Beginning	Emerging	Developing
Number of students	All	1,964	505	436
Starting Year level	Year 7	37%	34%	36%
	Year 8	33%	29%	33%
	Year 9	29%	37%	31%
Gender	Female	49%	53%	53%
	Male	51%	47%	47%
Refugee status	Non-refugee	68%	90%	98%
	Previously or currently on a refugee visa	32%	10%	2%
New arrival status (current or historical)	No	17%	28%	29%
	New arrival to Australia	83%	72%	71%
School remoteness	Major cities of Australia	89%	89%	90%
	Inner regional Australia	6%	7%	7%
	Outer regional Australia	1%	2%	2%
	Remote/Very remote Australia	0%	0.2%	0.2%
	Unknown	4%	2%	1%
Starting age in Australian schools	Mean	13.61	13.61	13.37
	SD	1.70	1.09	1.03
Average student SEA	Mean	6.66	8.62	9.37
	SD	2.78	2.60	2.31
Average school mobility	Mean	28.85	24.42	21.82
	SD	12.24	9.91	8.20

Appendix E: Part 2 technical details of accelerated failure time model

Survival analysis is a statistical approach to analyse the time taken for 'an event of interest' to occur. All EAL students from 2014 to 2022 were tracked to identify their progress to the Consolidating phase (or higher). Two 'Events of interest' include reaching:

- Consolidating or higher (i.e., Consolidating or 'Not required' status [the next state after the Consolidating phase])

- next phase or higher. Note that in most survival analyses, the event of interest is defined as a failure or a death, which is a negative outcome.

However, in this analysis, the event refers to a progression from a lower phase to the Consolidating phase (or higher), which is a positive outcome. In addition, as the EAL students can travel backward along the learning progression, the first time the EAL students reached the next phase or higher or the Consolidating phase (or higher) defines the time to event.

We proposed using the accelerated failure time (AFT) model to analyse the event time over the traditional Cox proportional hazards regression model because:

1. the rate of event occurrence is not constant and
2. the proportional hazards assumption under the Cox model is violated.

As a student's progression rate to the Consolidating/next phase or higher is not constant, the AFT model will be more appropriate to model the non-constant or non-monotonic progression rate along the learning progression.

EAL/D Annual Survey data from 2014 to 2022 were first broken down into 4 analysis groups and by EAL status. Some students or student records were excluded from the analysis for different reasons as explained in <u>section 3.3.1 Step 1: Identify EAL student groups for analysis</u>. Then, the AFT model was implemented to each of the 3 EAL groups (Beginning, Emerging and Developing) in each of the 4 analysis groups. The specification of the AFT model is provided in this section.

Let T_{ij} denote the time of the occurrence of progression to the Consolidating/next phase or higher for student i in school j. The AFT model specifies a direct linear relationship between the logarithm of the event time and the contextual factors:

$$\log T_{ij} = b_0 + b_1 x_{1ij} + \ldots + b_n x_{nij} + b_{n+1} w_{1j} + \ldots + b_{n+k} w_{kj} + e_{ij}$$

where x_{1ij} to x_{nij} are the student-level contextual factors and w_{1j} to w_{kj} are the school-level contextual factors. The student-level factors included gender, refugee status, New Arrivals Program status, average student SEA score, first enrolment year level in Australian schools, and starting age at Australian schools. The school-level factors included average school-level mobility and school remoteness. $b_1, \ldots, b_{n+k}$ are the regression coefficients associated with the contextual factors. e_{ij} is the random error that is assumed to follow a particular distribution.

The random error distribution determines the type of AFT model being used. Three AFT models with different random error distributions were tested. The 3 models included the Weibull model with extreme-value random error, loglogistic model with logistic random error and lognormal model with normal random error. These 3 different models can accommodate different patterns in the instantaneous rate of occurrence of the event of interest. Akaike's information criteria (AIC) was used as the model selection criteria. A smaller AIC indicates a better model fit to the data and, hence, the model with the smallest AIC was chosen as the final model.

Maximum likelihood estimation was used to estimate the model parameters such that the log likelihood function is maximised. Refer to the Stata manual on the command 'streg' for more details (StataCorp, 2023). Once all the model parameters are estimated, the proportion of students progressing to the Consolidating/next phase or higher over time can be estimated. The regression coefficients in the AFT model are interpreted as time ratios.

For model interpretation, the regression coefficients of the AFT model are interpreted as time ratios. For a categorical variable, the time ratio for a particular response category (e.g., EAL students with refugee background) is expressed as exp(b) where b is the regression coefficient of the binary dummy variable, which indicated whether a student is in that category (e.g., has a refugee background). The time ratio represents the ratio of the time taken by students with characteristics specified in the particular response category relative to students in the reference category, holding other characteristics constant. A time ratio significantly greater than 1 indicates that the time to event taken by the EAL students in the particular category is significantly longer than the EAL students with the covariate in the reference category. For a continuous variable, a time ratio greater than 1 indicates that the time taken to experience the event increases when the variable (e.g., SEA) increases. Contrarily, a time ratio less than 1 indicates that the time taken decreases when the continuous variable increases.

Appendix F: Details of subgroup results

F.1 Percentage of EAL students reaching Consolidating phase (or higher) after 3 years in each subgroup

Table F1 shows the percentage of EAL students reaching the Consolidating phase (or higher) after 3 years in each subgroup for Kindergarten to Year 9 starters commencing at different phases.

Table F1: Percentages of EAL students reaching Consolidating phase (or higher) after 3 years for all starters by starting phases

Variables	Category	Beginning	Emerging	Developing
Gender	Female	23%	41%	63%
	Male	19%	37%	61%
Refugee status	Non-refugee	21%	39%	62%
	Previously or currently on a refugee visa	12%	31%	53%
New arrival status (current or historical)	No	21%	38%	61%
	New arrival to Australia	21%	44%	67%
School remoteness	Major cities of Australia	20%	38%	62%
	Inner regional Australia	40%	67%	82%
	Outer regional Australia	34%	60%	76%
	Remote/Very remote Australia	51%	56%	88%
SEA quarter	1: lowest	12%	26%	48%
	2	17%	32%	55%
	3	23%	39%	62%
	4: highest	29%	47%	68%

F.2 Time ratios from the accelerated failure time models by starting phase for Kindergarten to Year 9 starters

Table F2 shows all the time ratios associated with each variable from the AFT models investigating the time taken to progress to the Consolidating phase (or higher).

Table F2: Time ratios for demographic factors (all students with all starting phases)

Demographic factor	Time ratio	Lower Confidence Limit (LCL)	Higher Confidence Limit (HCL)
Emerging (Ref: Beginning)	0.82	0.82	0.83
Developing (Ref: Beginning)	0.64	0.64	0.65
Male (Ref: female)	1.06	1.05	1.07
Refugee (Ref: non refugee)	1.14	1.12	1.17
New arrival status (historical or current) (Ref: not new arrival)	1.01[ns]	0.99	1.02
Inner regional (Ref: Major cities)	0.71	0.69	0.72
Outer regional (Ref: Major cities)	0.78	0.74	0.82
Remote/Very remote (Ref: Major cities)	0.56	0.47	0.68
Lower SEA (Q1 and Q2) (Ref: higher SEA (Q3 and Q4))	1.22	1.21	1.23
School mobility	1.002	1.001	1.002
Year 1 (Ref: Kindergarten)	0.94	0.92	0.97
Year 2 (Ref: Kindergarten)	0.91	0.89	0.94
Year 3 (Ref: Kindergarten)	0.87	0.84	0.89
Year 4 (Ref: Kindergarten)	0.90	0.87	0.93
Year 5 (Ref: Kindergarten)	0.93	0.90	0.96
Year 6 (Ref: Kindergarten)	0.95	0.91	0.99
Year 7 (Ref: Kindergarten)	0.96[ns]	0.93	1.00
Year 8 (Ref: Kindergarten)	0.96[ns]	0.91	1.00
Year 9 (Ref: Kindergarten)	0.91	0.87	0.96

Note: ns indicates time ratios that are not statistically significant.

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