



What's Happening

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The achievement progress of English learner students in Arizona

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Key findings

More than 90 percent of Arizona's English learner students scored at or above the required level for reclassification as fluent English proficient students over a period of six school years. Their cumulative passing rate was highest for the English language proficiency test, followed by academic tests in English language arts and math. English learner students who were eligible for special education services had the lowest passing rates on all three tests. In general, English learner students in higher grades had lower cumulative passing rates on all three tests than students in lower grades.

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Summary

To address the question of how to successfully educate growing numbers of English learner students, especially those who struggle to pass state English language arts and math content tests, this study followed cohorts of English learner students in Arizona over six school years to assess their progress in English proficiency. The study also tracked their academic progress in English language arts and math content knowledge. It analyzed three cohorts—which started at kindergarten, grade 3, and grade 6—from 2006/07 through 2011/12 by their level of English proficiency at the start of the study, eligibility for special education services, eligibility for a school lunch program (a proxy for poverty), gender, and grade level.

To track the students' progress, the study used Arizona's English language proficiency test and the states' knowledge content tests in English language arts and math. This report describes the cumulative percentage of Arizona's English learner students who reached each of three specific milestones during the study period: meeting the criteria for reclassification as fluent English proficient students, passing the English language arts content test for the first time, and passing the math content test for the first time. The study also compared the cumulative passing rates of English learner students taking the three tests. Finally it compared the students' progress in English proficiency with Arizona's expectation that English learner students advance at least one proficiency level each year.

During the study period more than 90 percent of the English learner students were reclassified as fluent English proficient students.

In each of the three grade-level cohorts, the overall cumulative passing rate was highest for the English language proficiency test, followed by the English language arts content test, and then the math content test.

- Within the kindergarten cohort, 91 percent of students passed the English language proficiency test, 80 percent passed the English language arts content test, and 70 percent passed the math content test.
- Within the grade 3 cohort, 97 percent of students passed the English language proficiency test, 73 percent passed the English language arts content test, and 68 percent passed the math content test.
- Within the grade 6 cohort, 94 percent of students passed the English language proficiency test, 51 percent passed the English language arts content test, and 43 percent passed the math content test.

The largest differences in cumulative passing rates for all three tests were associated with student eligibility for special education services and with initial English language proficiency level (on a scale of 1 to 5). Smaller differences in cumulative passing rates were associated with student eligibility for school lunch programs and with student gender.

For the kindergarten and grade 3 cohorts, English learner students who started the study at the highest English language proficiency level below that needed for reclassification as fluent English proficient students had higher cumulative passing rates on the English language arts and math content tests than English learner students who started at lower English language proficiency levels. However, for the grade 6 cohort, English learner students who started the study at the lowest proficiency level had higher cumulative passing

rates than English learner students who started at the highest level. English learner students in higher grades had lower cumulative passing rates on the English language arts and math content tests than English learner students in lower grades.

Students did not progress in English fluency at the expected annual measurable achievement objective rate of one level per year. The percentage of English learner students who met this progress expectation varied from 27 percent to 89 percent for groups with different combinations of grade-level cohort and initial English language proficiency level.

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Why this study?

Across the United States, particularly in states served by Regional Educational Laboratory (REL) West, concern is widespread about how to successfully educate growing numbers of English learner students, especially those who struggle to pass state English language arts and math content tests (Horwitz et al., 2009; Olsen, 2010; Quality Counts, 2009). The members of REL West's English Learner Alliance, which includes representatives of state departments of education in Arizona, Nevada, and Utah, requested studies of the English language proficiency and academic progress of English learner students in their states. This study is for Arizona.

Having a better understanding of the progress of English learner students in both English language proficiency and subject matter content knowledge will enable English Learner Alliance members to more effectively target interventions for English learner students who are not achieving English language proficiency within expected time frames and for those not passing English language arts and math content tests.

While previous studies examined some of these questions, the study periods were generally more limited in duration than in this study (box 1). Few, if any, directly examined the progress of cohorts of English learner students over five or more years, and none examined English learner students' progress on content knowledge tests in English language arts and math, based both on students' initial English language proficiency level and on their initial grade level. This report addresses this gap in the literature by providing empirical evidence on the progress of grade-level cohorts of English learner students in English language proficiency and in English language arts and math content knowledge over several years. The study also examined how these outcomes differed by student subgroups. See box 2 for definitions of key terms used in the report.

Box 1. Previous studies show English learner students tend to lag behind native English speakers on academic achievement tests

English learner students, as a group, tend to lag behind native English speakers in their rate of academic achievement (Kindler, 2002; Massachusetts Department of Elementary and Secondary Education, 2012; Olsen, 2010; Ruiz-de-Velasco & Fix, 2000; Short & Fitzsimmons, 2007). This gap reflects largely English learner students' need to simultaneously learn English and master content knowledge (Genesee, Lindholm-Leary, Saunders, & Christian, 2005). However, English learner students are a diverse group with different strengths and needs, depending on a number of characteristics (Kindler, 2002).

Characteristics that appear to be related to academic achievement for English learner students specifically, and for students generally, for which most states and districts collect data include initial English language proficiency when students first enroll in school (Cook, Linquanti, Chinen, & Jung, 2012; Collier, 1989, 1992; Halle, Hair, Wandner, McNamara, & Chien, 2012). They also include grade level (Genesee et al., 2005), poverty status (Goldenberg, 2008; Mulligan, Halle, & Kinukawa, 2012; Rathbun & West, 2004; Roberts, 2009; Roberts & Bryant, 2011), disability status (Liasidou, 2013; McCardle, McCarthy-Mele, Cutting, Leos, & D'Emilio, 2005; Nguyen, 2012), and gender (Perie, Moran, & Lutkus, 2005). These are described below.

Having a better understanding of the progress of English learner students in both English language proficiency and subject matter content knowledge will enable English Learner Alliance members to more effectively target interventions for students who are not achieving proficiency within expected time frames and for those not passing content tests

(continued)

Box 1. Previous studies show English learner students tend to lag behind native English speakers on academic achievement tests *(continued)*

Initial English language proficiency and grade level. Research shows that generally English learner students who enter school at the same English proficiency level tend to make greater year-to-year progress in English language proficiency and academic content knowledge in the lower grades than they do in the higher grades (Cook, Wilmes, Boals, & Santos, 2008; Grissom, 2004; Kieffer, 2008, 2010, 2011; Salazar, 2007).

Poverty status. English learner students from homes of lower socioeconomic status generally score lower on academic content tests and are less likely to achieve reclassification as fluent English proficient students than their peers of higher socioeconomic status (Mulligan et al., 2012; Roberts & Bryant, 2011).

English learner students with disabilities. Nearly 400,000 English learner students in the United States in grades K–12 were identified as needing special education services in the 2001/02 school year (McCardle et al., 2005). While a learning disability can affect a student’s academic achievement, it is often difficult to determine whether English learner students struggle to develop literacy and other academic benchmarks because of their limited English proficiency or because they have a learning disability (Klingner, Artiles, & Barletta, 2006; Nguyen, 2012).

Gender. Differences in academic achievement by gender have been found among K–12 students, including small but persistent math gender disparities favoring boys (McGraw, Lubienski, & Strutchens, 2006; Perie et al., 2005) and small reading-achievement gender disparities favoring girls (Perie et al., 2005).

Box 2. Key terms

Annual measurable achievement objective 1. The federal Elementary and Secondary Education Act of 2001 asked states to set expectations of how quickly English learner students should be expected to progress from one English proficiency level to the next, measured by annual increases in the number or percentage of students making progress in learning English. Arizona, like about half the states, set an expectation of increasing one English language proficiency level, for example from emergent to basic, per school year. That means that English learner students in the study should have been reclassified as fluent English proficient students within one to four years of the start of the study, depending on the level at which they started in 2006/07. See appendix A.

Arizona English Language Learner Assessment (AZELLA). This assessment makes the initial determination of whether a student is classified as an English learner and places the student at one of five levels of English proficiency. The assessment measures proficiency in four domains: listening, writing, reading, and speaking. Students are reclassified as fluent English proficient students when they pass the fifth level of the assessment. The AZELLA is given every spring, and students can retake it up to twice a year with the recommendation of a teacher. See appendix A.

(continued)

Box 2. Key terms *(continued)*

Arizona's Instrument to Measure Standards (AIMS) English language arts and math content tests. Arizona administers state content tests in several subjects including English language arts and math. Students take content tests annually in grades 3–8 and in either grade 10 or 11 in high school; there is no test in grade 9.

Cohorts. Students were grouped into three analytic grade-level cohorts based on their 2006/07 grade level: kindergarten, grade 3, or grade 6. Within each cohort, students' initial English language proficiency level was determined based on the 2006/07 AZELLA. The first academic assessment tests were also administered in 2006/07. The study covered the six school years 2006/07–2011/12. Thus the kindergarten cohort followed students from kindergarten to grade 5, the grade 3 cohort from grade 3 to grade 8, and the grade 6 cohort from grade 6 to grade 11 (also see box 3).

Cumulative percentage. The total percentage of students meeting an achievement outcome up to that point in time. For example, the cumulative percentage of English learner students who passed the math content test in year 3 of the study is the total percentage of English learner students who passed years 1, 2, and 3 added together.

English learner. Students are classified as English learner students if they fall into levels 1–4 on the AZELLA. Students are asked to take the assessment if their family speaks a language other than English at home.

English language proficiency levels. Arizona has five levels of English language proficiency: pre-emergent (level 1), emergent (level 2), basic (level 3), intermediate (level 4), and proficient (level 5). English learner students are reclassified as fluent English proficient students when they achieve level 5. The levels are based on the AZELLA (see above). Throughout this report, English language proficiency level refers to the English language proficiency level in the first year of the study period.

Fluent English proficient students. Students are reclassified from English learner students to fluent English proficient students when they achieve level 5, proficient, on the English language proficiency assessment (AZELLA).

Special education services. All special education services and individualized education programs under this Arizona Department of Education designation in the state dataset were included in the study sample. Data were not collected on individual types of learning disabilities or special education services within this general category.

What the study examined

This study is a descriptive analysis of the progress of three grade-level cohorts of Arizona English learner students in English language proficiency and in English language arts and math content knowledge over 2006/07–2011/12. English language proficiency scores and English language arts and math content test scores were followed over the study period.

Three cohorts of students were examined based on their grade level in 2006/07: kindergarten, grade 3, or grade 6. Students' initial English language proficiency level was based on results on Arizona's 2006/07 English language proficiency test (see box 2).

The study examined the cumulative percentages of students in each of these cohorts who reached each of three specific academic milestones over the course of the study (2006/07–2011/12):

- Scoring at or above the level for reclassification as fluent English proficient students on the state English language proficiency test.
- Passing the English language arts content test for the first time.
- Passing the math content test for the first time.

The study also examined how meeting these criteria varied by students' initial English language proficiency level (see box 2), eligibility for special education services, eligibility for federal school lunch programs (a proxy for low-income status), gender, and grade level (which, of course, changed over the study period).

Specifically, this report addresses the following research questions for each year of the study period.

To determine how quickly English learner students became proficient in English:

- What was the cumulative percentage of English learner students from each cohort who were reclassified as fluent English proficient students for the first time after the baseline year (2006/07)?
- How did the cumulative percentage of English learner students who achieved reclassification as fluent English proficient students vary by students' initial English language proficiency level, eligibility for special education services, eligibility for school lunch program, gender, and grade level?

To determine how well English learner students did academically in English language arts and math:

- What was the cumulative percentage of English learner students from each cohort who passed the English language arts content test for the first time after the baseline year?
- How did the cumulative percentage of English learner students who passed the English language arts content test for the first time vary by students' initial English language proficiency level, eligibility for special education services, eligibility for the school lunch program, gender, and grade level?
- What was the cumulative percentage of English learner students from each cohort who passed the math content test for the first time after the baseline year?
- How did the cumulative percentage of English learner students who passed the math content test for the first time vary by students' initial English language proficiency level, eligibility for special education services, eligibility for a school lunch program, gender, and grade level?

The study also compared the cumulative reclassification rates of English learner students on the English proficiency tests and the cumulative passing rates on content tests in English language arts and math. Finally it compared the cumulative passing rates for English learner students at each English proficiency level with Arizona's progress expectations on annual measurable achievement objective 1, of advancing at least one English language proficiency level each year.

Box 3 summarizes the study's data sources and methods. Appendix B provides more detail.

This report provides empirical evidence on the progress of grade-level cohorts of English learner students in English language proficiency and in English language arts and math content knowledge over several years

Box 3. Data and methods

Data source. The state of Arizona provided data on all students who had English language proficiency test results and subject matter content test results in English language arts and math from 2006/07 through 2011/12, starting in kindergarten, grade 3, and grade 6. This set of data enabled Regional Educational Laboratory West to examine aspects of these students' progress in English language proficiency and academic knowledge over six school years.

Analysis sample and methods. Because the study analyzed the entire population of Arizona English learner students who met the analytic sample criteria for each of the grade-level cohorts, statistical tests were not conducted.

The analytic sample included all students identified as English learner students who were enrolled in the state's public schools in the designated grade of the first year of the cohort, who progressed to the next grade level each year, and who had the required test data throughout the six years being analyzed.

Each cohort consisted of a separate sample of students. For example, the students in the grade 3 cohort were English learner students who enrolled in an Arizona public school in grade 3 in 2006/07, progressed to the next grade level each year, and had the required Arizona test score data through grade 8 in 2011/12. Each cohort was progressively smaller because the grade 3 and grade 6 cohorts did not include any students who were identified as English learner students in previous school years but who met the reclassification criteria as fluent English proficient students before the study began. (For English learner students in the kindergarten cohort, their English language proficiency level was their level when they started school in 2006/07.) For example, for the English proficiency tests, the kindergarten cohort had 16,377 students, the grade 3 cohort had 7,938 students, and the grade 6 cohort had 4,287 students. For a description of the steps taken to define each analytic sample, see table B1 in appendix B.

The analyses were done for each English learner grade-level cohort as a whole and also by both cohort and each of four student characteristics at the start of the 2006/07 school year: English language proficiency level, eligibility for special education services, eligibility for federal school lunch programs, and gender. For a breakdown of the characteristics of the whole sample and each cohort, see tables B2–B5 in appendix B.

For the English language proficiency analysis, 2007/08 was the first year when data were available on measured progress (relative to 2006/07), and 2011/12 was the final year, for a total of five years of progress measurement. For the subject matter content tests, English learner students' achievement levels for school years 2006/07–2011/12 were examined, for a total of six years.

See appendix B for further details on data and methods.

The study included all students identified as English learner students who were enrolled in the state's public schools in the designated grade, who progressed to the next grade level each year, and who had the required test data throughout the six years being analyzed

What the study found

Between 2006/07 and 2011/12 all three cohorts of English learner students made major progress in achieving reclassification as fluent English proficient students. By 2011/12 at least 90 percent of each cohort's students were reclassified as fluent English proficient students based on their performance on the Arizona English Language Learner Assessment (AZELLA; see box 2). English learner students in the grade 3 cohort had the highest cumulative reclassification rate (97 percent), while students in the kindergarten cohort had the lowest cumulative reclassification rate (91 percent). This finding differs from previous research nationally, which found that English learner students in the lower grades made

better progress in developing fluency. Still, the differences in rates of achieving English proficiency among this study's cohorts were small.

As expected, English learner students who started the study at the highest level below proficient (the intermediate level of English proficiency) had the highest cumulative rates of reclassification as fluent English proficient students. However, in the grade 3 and 6 cohorts, English learner students who started the study at the two lowest English language proficiency levels (pre-emergent and emergent) had higher cumulative reclassification rates than students who began the study at the third highest level (basic).

Findings were similar for cumulative passing rates on the English language arts and math knowledge content tests, known as Arizona's Instrument to Measure Standards. English learner students in the kindergarten cohort had the highest cumulative passing rates in English language arts and math, while English learner students in the grade 6 cohort had the lowest cumulative passing rates. This finding is consistent with previous research that found that students in lower grades made better academic progress than students in higher grades. For the kindergarten and grade 3 cohorts, English learner students who started the study at the intermediate English proficiency level had the highest cumulative passing rates in English language arts and math, as expected. However, for the grade 6 cohort, students who started the study at the lowest English language proficiency (pre-emergent) level had the highest cumulative passing rates.

Between 2006/07 and 2011/12 all three cohorts of English learner students made major progress in achieving reclassification as fluent English proficient students

Across all three tests, the range of cumulative passing rates for the three grade-level cohorts was highest for the English language proficiency test (91–97 percent), followed by the English language arts content test (51–80 percent), and then the math content test (43–70 percent). The same pattern occurred for each English learner student subgroup. English learner students who were eligible for special education services had lower cumulative proficiency rates than their peers who were not eligible. This difference was the largest in the study. The largest differences in the cumulative passing rates for the two academic content tests were also between English learner students who were and those who were not eligible for special education services. The grade 3 and 6 cohorts had up to 25 percent of students who were both eligible for special education services and at the basic level of English proficiency.

English learner students eligible for school lunch programs and male students also scored lower on the English proficiency test and the two academic tests than their counterparts who were not eligible for school lunch programs and female students.

Rather than progressing one English proficiency level per year, as called for in Arizona's annual measurable achievement objective 1, English learner students made progress at different rates, with 6 of 12 (50 percent) groupings achieving the expected rate of progress. For example, students making progress at the recommended rate ranged from a low of 27 percent (grade 6 cohort, initial English language proficiency level 3) to a high of 89 percent (grade 3 cohort, initial English language proficiency level 1). This variation suggests that the standards might be unrealistic or too uniform, needing further research and adjustment to fit the different types of student.

Specific results related to each research question are presented below.

How quickly English learner students became proficient in English

Almost all the English learner students were reclassified as fluent English proficient.

Across all three grade-level cohorts, after five years, more than 90 percent of the English learner students scored at or above the required level for reclassification as fluent English proficient on the Arizona English language proficiency test (figure 1). The grade 3 cohort had the highest cumulative reclassification rate, while the kindergarten cohort had the lowest.

English learner students in all three cohorts made greater progress in cumulative reclassification rates in the first few years of the study than toward its end.

The kindergarten cohort's progress toward achieving reclassification as fluent English proficient students was faster during grades 1 and 2 and then slowed in grade 3 through the end of the study. For the grade 3 cohort, the break in the rate of progress was seen in grade 6, after which progress slowed in grade 7 through the end of the study. This pattern has not been noted in the literature, perhaps because previous studies were not able to track student progress for five years as this study did.

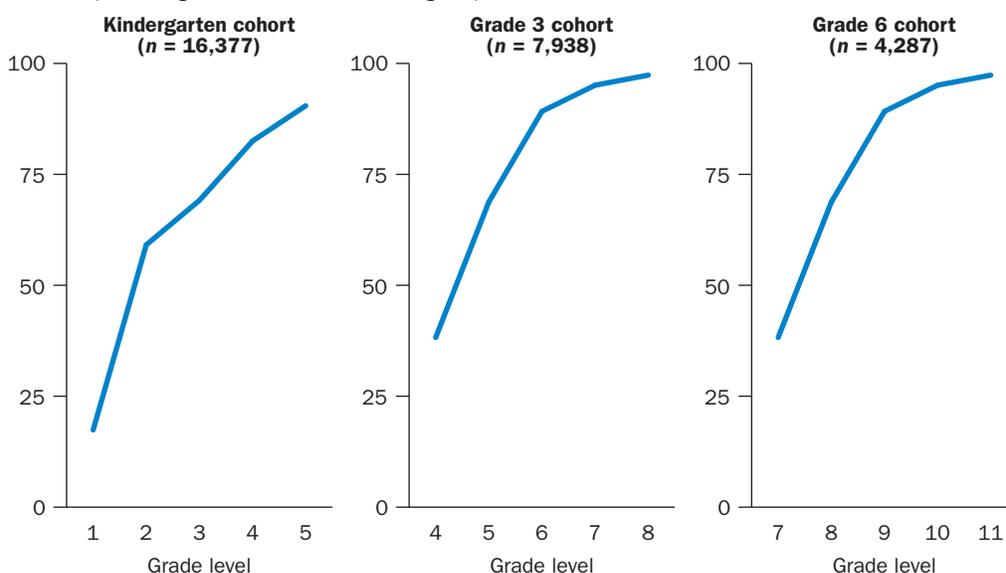
English learner students who began with intermediate English proficiency scored highest on language proficiency tests.

Compared with students at other English language proficiency levels, English learner students who began the study at the intermediate level, the highest English language proficiency level below proficient, had the highest cumulative passing rate on Arizona's English language proficiency test (figure 2). However, for the grade 3 and 6 cohorts, aside from the students who began the study at the intermediate level, English learner students with higher initial English language proficiency levels did

Across all three grade-level cohorts, after five years, more than 90 percent of the English learner students scored at or above the required level for reclassification as fluent English proficient on the Arizona English language proficiency test

Figure 1. Progress in achieving reclassification as fluent English proficient students slowed at the end of the study period for all cohorts, 2006/07–2011/12

Cumulative percentage reclassified as fluent English proficient

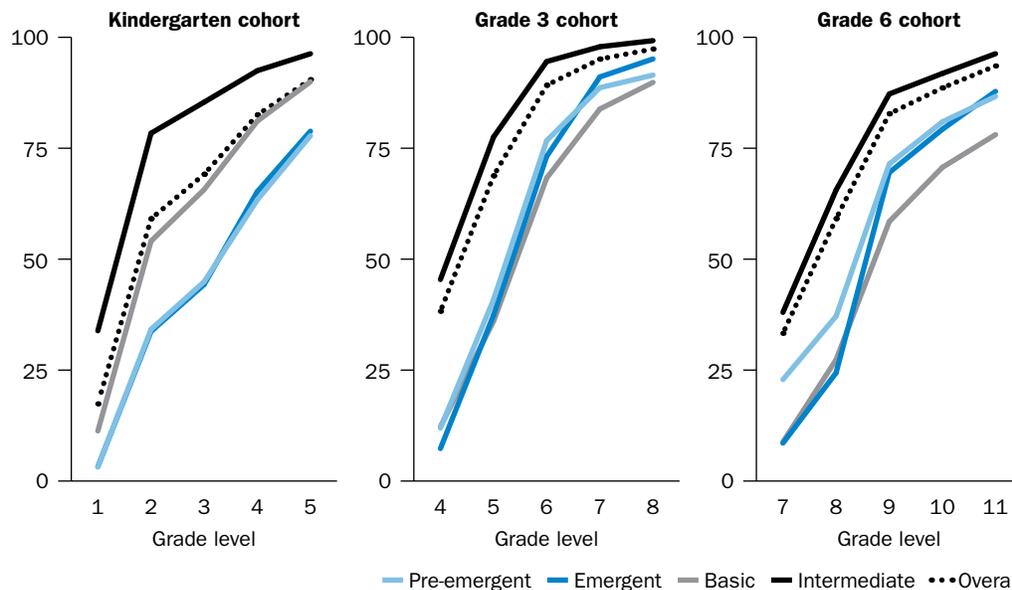


Note: The English language proficiency assessment in 2006/07 serves as a baseline, defining the initial population of English learner students for this analysis.

Source: Authors' analysis of student-level data from Arizona Department of Education, 2006/07–2011/12.

Figure 2. For the grade 3 and grade 6 cohorts, English learner students at the two lowest initial English language proficiency levels (pre-emergent and emergent) outperformed students with an initial English language proficiency level of basic in achieving reclassification as fluent English proficient, 2006/07–2011/12

Cumulative percentage reclassified as fluent English proficient



English learner students who began the study at the intermediate level had the highest cumulative passing rate on Arizona's English language proficiency test

Note: The English language proficiency assessment in 2006/07 serves as a baseline, defining the initial population of English learner students for this analysis. The number of English learner students in each subgroup is as follows. Kindergarten cohort: pre-emergent, 857; emergent, 1,323; basic, 8,991; and intermediate, 5,206. Grade 3 cohort: pre-emergent, 176; emergent, 123; basic, 1,397; and intermediate, 6,242. Grade 6 cohort: pre-emergent, 105; emergent, 82; basic, 556; and intermediate, 3,544.

Source: Authors' analysis of student-level data from Arizona Department of Education, 2006/07–2011/12.

not always have higher cumulative passing rates than their lower level peers. For example, in the grade 3 and 6 cohorts, students who started the study at the pre-emergent (level 1) and emergent (level 2) proficiency levels had higher final cumulative passing rates on the English language proficiency test than the students who started the study at the basic level (level 3).

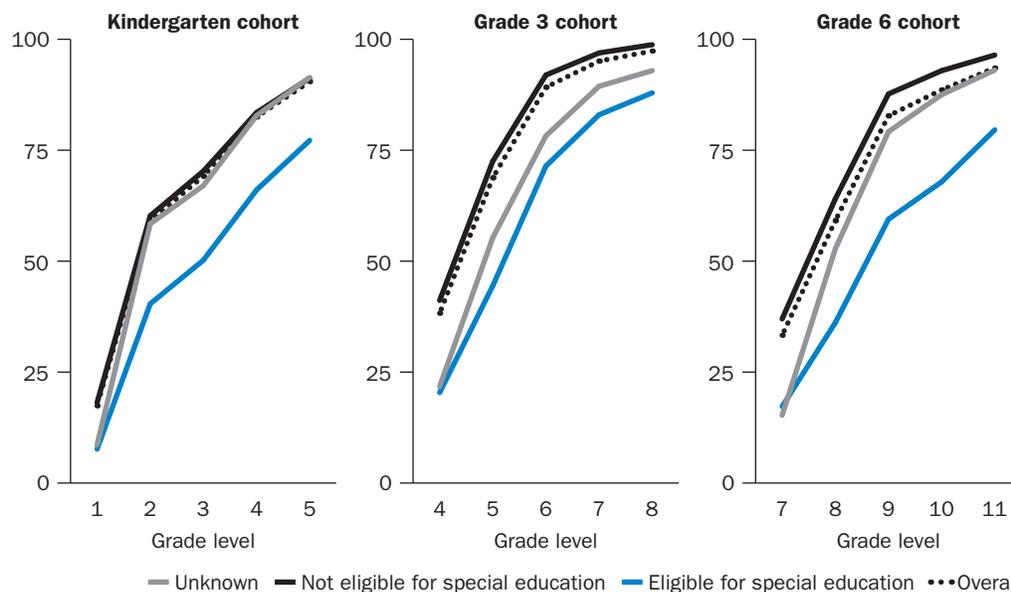
English learner students who were eligible for special education services had lower cumulative passing rates on the English proficiency test than their ineligible peers.

Some of the largest differences in the rates of achieving reclassification occurred between English learner students who were eligible for special education services and English learner students who were not eligible. For all three grade-level cohorts, English learner students who were eligible for special education services at the start of the study had lower cumulative rates of reclassification as fluent English proficient than students who were not eligible (figure 3). After five years, this gap remained, with slight reductions in the kindergarten and grade 3 cohorts.

The differences in cumulative passing rate between English learner students who were and those who were not eligible for special education services ranged from 11 percentage points in the grade 3 cohort to 17 percentage points in the grade 6 cohort. The highest cumulative reclassification rate for English learner students eligible for special education services at the start of the study was 88 percent in the grade 3 cohort.

Figure 3. The grade 6 cohort had the largest difference in the cumulative percentage of students achieving reclassification as fluent English proficient students between English learner students who were eligible for special education services and those who were not eligible, 2006/07–2011/12

Cumulative percentage reclassified as fluent English proficient



For all three grade-level cohorts, English learner students who were eligible for special education services at the start of the study had lower cumulative rates of reclassification as fluent English proficient than students who were not eligible

Note: The English language proficiency assessment in 2006/07 serves as a baseline, defining the initial population of English learner students for this analysis. The number of English learner students in each subgroup is as follows. Kindergarten cohort: unknown, 279; eligible for special education services, 904; not eligible, 15,194. Grade 3 cohort: unknown, 170; eligible for special education services, 952; not eligible, 6,816. Grade 6 cohort: unknown, 72; eligible for special education services, 725; not eligible, 3,490.

Source: Authors' analysis of student-level data from Arizona Department of Education, 2006/07–2011/12.

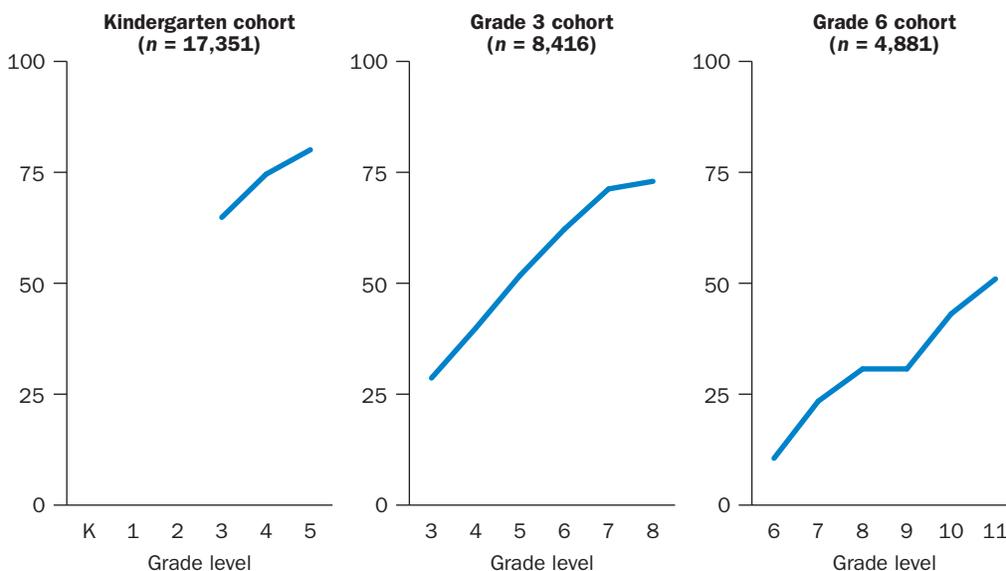
English learner students eligible for school lunch programs and male English learner students had lower cumulative passing rates of reclassification as fluent English proficient students than their peers who were not eligible and female students. In two of the three cohorts, English learner students who were eligible for school lunch programs had lower cumulative rates of reclassification as fluent English proficient students than their ineligible counterparts. The difference was 3 percentage points in the kindergarten cohort, 1 percentage point in the grade 3 cohort, and 0 percentage point in the grade 6 cohort. Male English learner students had lower cumulative reclassification rates than their female English learner peers by 5 percentage points in the kindergarten cohort and 1 percentage point in the grade 3 and grade 6 cohorts (see figures C1 and C2 in appendix C).

How well English learner students did academically in reading and math

On the English language arts content test, the kindergarten cohort had the highest cumulative passing rate, while the grade 3 and grade 6 cohorts experienced steady progress. Across the three grade-level cohorts, over the course of the study, the cumulative passing rate on the English language arts content test ranged from 51 percent in the grade 6 cohort to 80 percent in the kindergarten cohort (figure 4). In contrast to the English language proficiency progress rates, the progress rates in English language arts for the grade 3 and grade 6 cohorts were mostly steady. For example, for the grade 3 cohort, the progress rate was continuous and did not break until grade 7, after which it slowed through grade 8.

Figure 4. Progress in passing English language arts content tests was steady from the beginning to the end of the study for the grade 3 and grade 6 cohorts, 2006/07–2011/12

Cumulative percentage passing English language arts



Across the three grade-level cohorts, the cumulative passing rate on the English language arts content test ranged from 51 percent in the grade 6 cohort to 80 percent in the kindergarten cohort

Note: The English language proficiency assessment in 2006/07 serves as a baseline, defining the initial population of English learner students for this analysis. Students take content tests in grades 3–8 and in either grade 10 or 11 in high school; there is no test in grade 9, and thus in the grade 6 cohort, there is a flat line between year 3 (grade 8) and year 4 (grade 9).

Source: Authors' analysis of student-level data from Arizona Department of Education, 2006/07–2011/12.

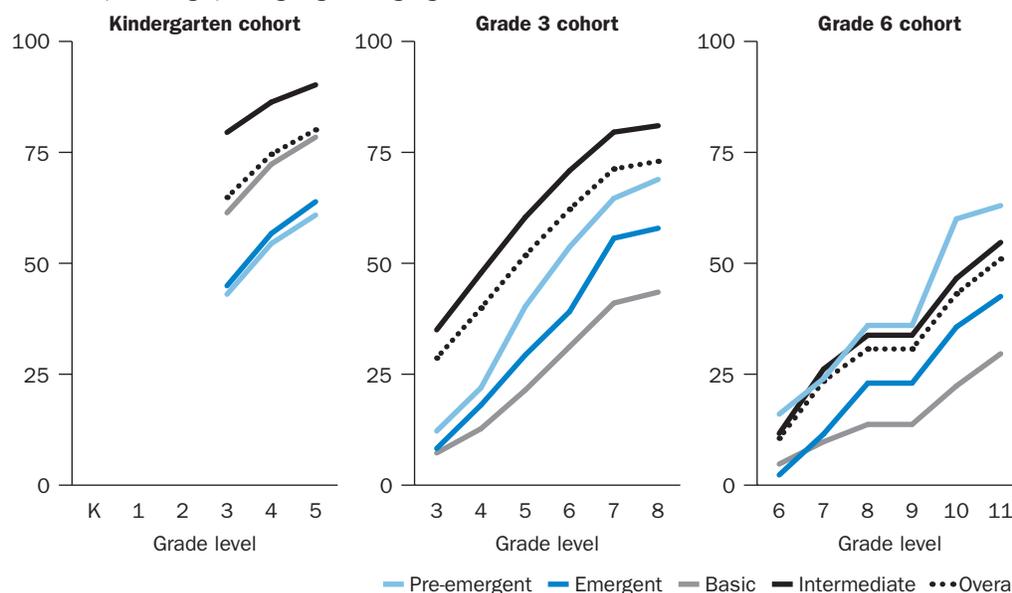
In two of the three cohorts, English learner students with the initial English proficiency level of intermediate had higher cumulative passing rates in English language arts than students at lower proficiency levels. In the kindergarten and grade 3 cohorts, English learner students who started the study at the intermediate English language proficiency level (the highest level below proficient) had higher cumulative passing rates in English language arts than students who started the study at lower proficiency levels.

In the kindergarten cohort, as expected, English learner students who started the study at the two higher English language proficiency levels below proficient (basic and intermediate) attained higher cumulative passing rates on the English language arts content test than students who started the study at the lower two English language proficiency levels (pre-emergent and emergent; figure 5). In contrast, for the grade 3 and grade 6 cohorts, students who started the study at the pre-emergent and emergent levels had higher cumulative passing rates in English language arts than students who started at the basic level. Furthermore, for the grade 6 cohort, students who started the study at the pre-emergent level surpassed the cumulative passing rate in English language arts of students who started at the intermediate level. Also, for that cohort, students who started in the second highest level (basic level) ended with the lowest cumulative English language arts passing rate.

English learner students who were eligible for special education services at the start of the study had lower cumulative passing rates on the English language arts content test than students who were not eligible. Some of the largest differences in the English

Figure 5. On the English language arts content test, English learner students initially assessed at the intermediate English language proficiency level had higher cumulative passing rates than English learner students at lower proficiency levels for the kindergarten and grade 3 cohorts but not for the grade 6 cohort, 2006/07–2011/12

Cumulative percentage passing English language arts



In the kindergarten and grade 3 cohorts, English learner students who started the study at the intermediate English language proficiency level had higher cumulative passing rates in English language arts than students who started the study at lower proficiency levels

Note: The English language proficiency assessment in 2006/07 serves as a baseline, defining the initial population of English learner students for this analysis. Students take content tests in grades 3–8 and in either grade 10 or 11 in high school; there is no test in grade 9, and thus in the grade 6 cohort, there is a flat line between year 3 (grade 8) and year 4 (grade 9). The number of English learner students in each subgroup is as follows. Kindergarten cohort: pre-emergent, 902; emergent, 1,409; basic, 9,525; and Intermediate, 5,515. Grade 3 cohort: pre-emergent, 164; emergent, 133; basic, 1,667; and intermediate, 6,452). Grade 6 cohort: pre-emergent, 100; emergent, 87; basic, 716; and intermediate, 3,978.

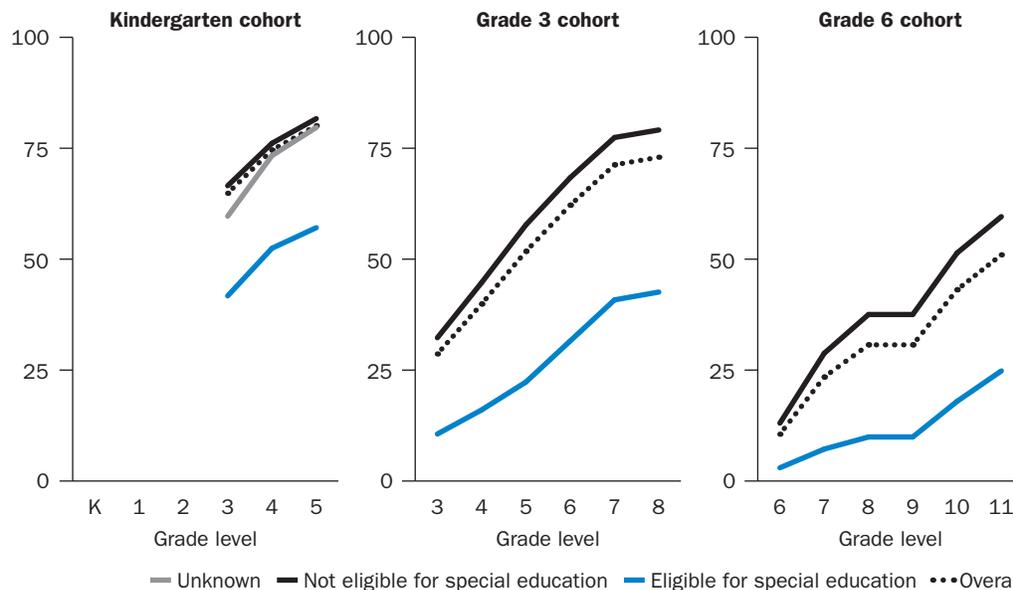
Source: Authors' analysis of student-level data from Arizona Department of Education, 2006/07–2011/12.

language arts cumulative passing rates occurred between English learner students who were eligible for special education services and those who were not eligible. English learner students who were eligible at the beginning of the study had lower cumulative passing rates on the English language arts content test than their peers who were not eligible (figure 6). These differences were constant for the kindergarten cohort. For the grade 3 and 6 cohorts, these differences increased as the study progressed. This was especially apparent in the grade 6 cohort, where only 25 percent of the English learner students who were eligible to receive special education services at the beginning of the study passed the English language arts content test, while 60 percent of their peers who were not eligible to receive special education services passed the English language arts test.

English learner students eligible for school lunch programs and male English learner students had lower cumulative passing rates in English language arts than their peers who were not eligible and female students. English language students who were eligible for school lunch programs had lower cumulative passing rates in English language arts than their ineligible counterparts. The difference was 6 percentage points in the kindergarten cohort, 7 percentage points in the grade 3 cohort, and 6 percentage points in the grade 6 cohort. Male English learner students had lower cumulative passing rates in

Figure 6. English learner students who were eligible for special education services started with lower passing rates on the English language arts content test, and these differences were constant for the kindergarten cohort and increased for the grade 3 and 6 cohorts, 2006/07–2011/12

Cumulative percentage passing English language arts



Some of the largest differences in the English language arts cumulative passing rates occurred between English learner students who were eligible for special education services and those who were not

Note: The English language proficiency assessment in 2006/07 serves as a baseline, defining the initial population of English learner students for this analysis. Students take content tests in grades 3–8 and in either grade 10 or 11 in high school; there is no test in grade 9, and thus in the grade 6 cohort, there is a flat line between year 3 (grade 8) and year 4 (grade 9). The number of English learner students in each subgroup is as follows. Kindergarten cohort: unknown, 315; eligible for special education services, 1,100; not eligible, 15,936. Grade 3 cohort: unknown, 0; eligible for special education services, 1,416; not eligible, 7,000. Grade 6 cohort: unknown, 0; eligible for special education services, 1,209; not eligible, 3,672.

Source: Authors' analysis of student-level data from Arizona Department of Education, 2006/07–2011/12.

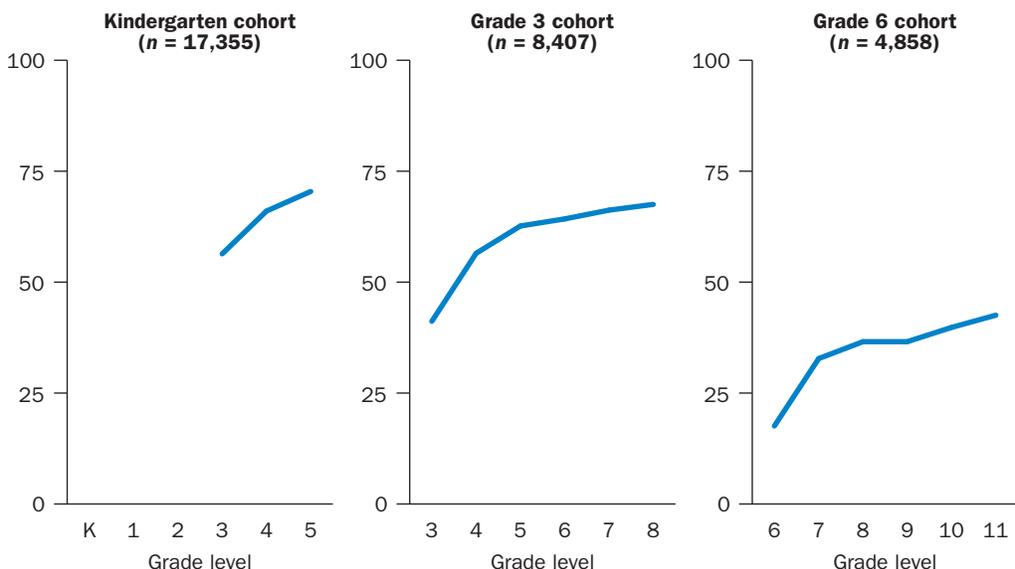
English language arts than their female counterparts. The differences were 8 percentage points in the kindergarten cohort, 7 percentage points in the grade 3 cohort, and 4 percentage points in the grade 6 cohort (see figures C3 and C4 in appendix C).

Cumulative passing rates on the math content test showed the same pattern among subgroups and cohorts as rates on the English language arts content test: the kindergarten cohort scored highest, and progress eventually slowed for the grade 3 and 6 cohorts. Across the three grade-level cohorts, the cumulative passing rate on the math content test ranged from 43 percent in the grade 6 cohort to 70 percent in the kindergarten cohort (figure 7). Similar to progress on Arizona's English language proficiency test, English learner students made greater cumulative passing rate progress during the first few years of the study period, and then progress slowed toward the end of the study. For example, for the grade 3 cohort on the math test, the cumulative passing rate increased from grade 3 to grade 4 and then started to slow by grade 5. The pattern was similar for the grade 6 cohort in which there was a break in grade 7 and then the rates slowed from grade 8 through the end of the study.

Kindergarten and grade 3 cohorts with intermediate initial English proficiency had higher cumulative passing rates on the math content test than students with lower

Figure 7. Progress in passing the math content test slowed toward the end of the study for the grade 3 and grade 6 cohorts, 2006/07–2011/12

Cumulative percentage passing math



Across the three grade-level cohorts, the cumulative passing rate on the math content test ranged from 43 percent in the grade 6 cohort to 70 percent in the kindergarten cohort

Note: The English language proficiency assessment in 2006/07 serves as a baseline, defining the initial population of English learner students for this analysis. Students take content tests in grades 3–8 and in either grade 10 or 11 in high school; there is no test in grade 9, and thus in the grade 6 cohort, there is a flat line between year 3 (grade 8) and year 5 (grade 10).

Source: Authors' analysis of student-level data from Arizona Department of Education, 2006/07–2011/12.

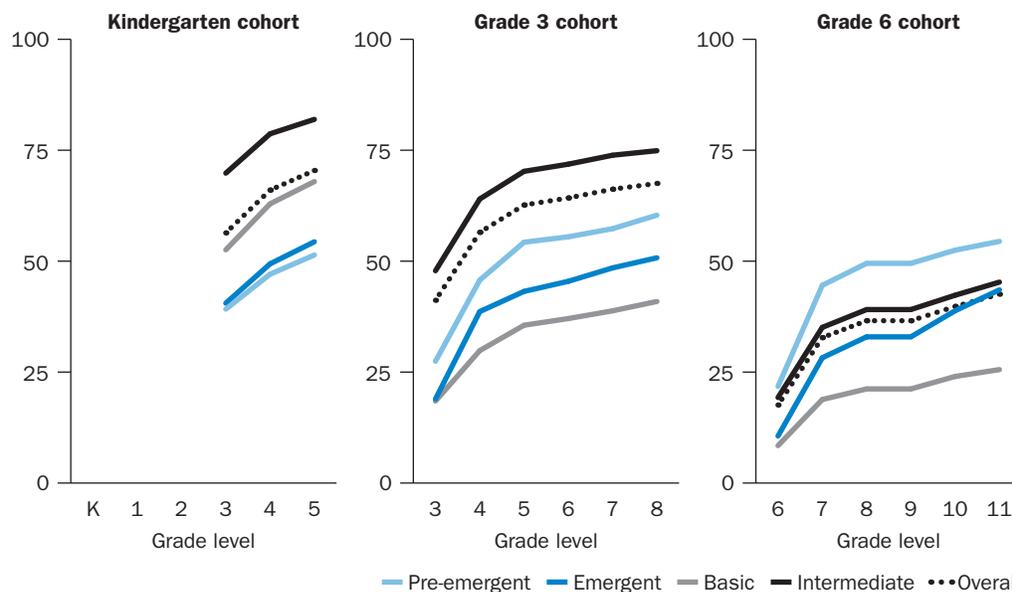
initial proficiency, while grade 6 cohorts who started at the lowest level of English proficiency surpassed the others. For kindergarten and grade 3 cohorts, English learner students who started the study at the intermediate English language proficiency level (the highest level below proficient) had higher cumulative passing rates in math than English learner students who started the study at lower English language proficiency levels.

The patterns for cumulative passing rates on Arizona's math test were similar to those for the English language arts content test. In the kindergarten cohort, English learner students who started the study at the two higher English language proficiency levels below proficient (basic and intermediate) attained higher cumulative passing rates on the math test than students who started the study at the two lower English language proficiency levels (pre-emergent and emergent; figure 8). In contrast, in the grade 3 and 6 cohorts, students who started the study at the pre-emergent and emergent levels attained higher cumulative passing rates in math than students who started the study at the basic level. Furthermore, for the grade 6 cohort, students who started the study at the pre-emergent level surpassed the cumulative passing rate in math of students who started the study at the intermediate level and other levels. As with the English language arts content test, the reason could be that the grade 3 and grade 6 cohorts contained a higher percentage of students eligible for special education services who had a basic level of English proficiency but did poorly on academic tests.

At the start of the study, in all three cohorts, English learner students who were eligible for special education services had lower cumulative passing rates on the math

Figure 8. On the math content test, English learner students initially assessed at the intermediate English language proficiency level had higher cumulative passing rates than English learner students at lower English language proficiency levels for kindergarten and grade 3 cohorts, but not for the grade 6 cohort, 2006/07–2011/12

Cumulative percentage passing math



In the kindergarten cohort, English learner students who started the study at the two basic and intermediate proficiency levels attained higher cumulative passing rates on the math test than students who started the study at the pre-emergent and emergent levels

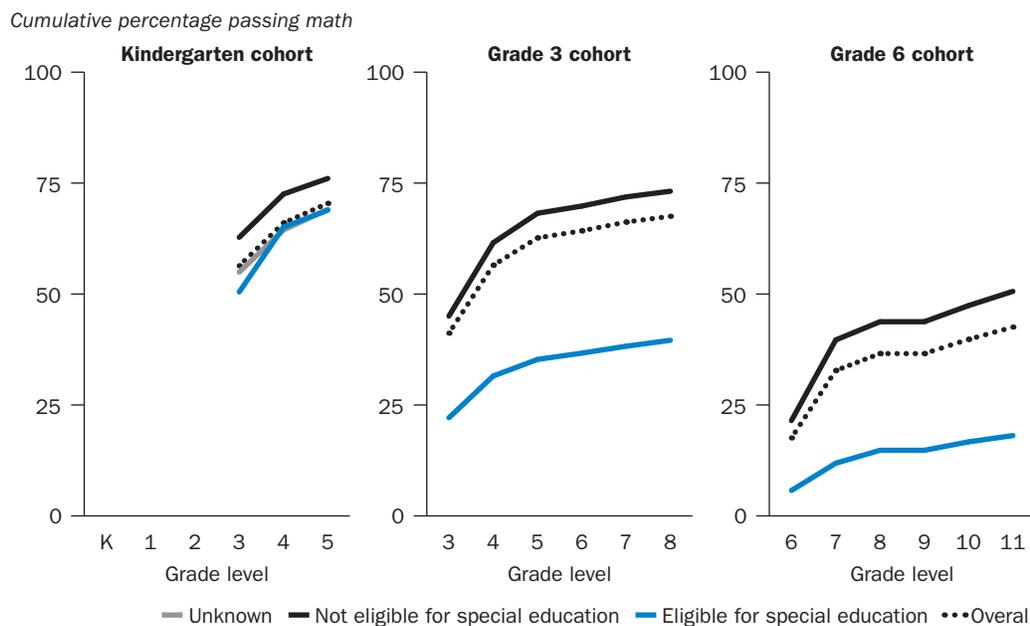
Note: The English language proficiency assessment in 2006/07 serves as a baseline, defining the initial population of English learner students for this analysis. Students take content tests in grades 3–8 and in either grade 10 or 11 in high school; there is no test in grade 9, and thus in the grade 6 cohort, there is a flat line between year 3 (grade 8) and year 4 (grade 9). The number of English learner students in each subgroup is as follows. Kindergarten cohort: pre-emergent, 901; emergent, 1,409; basic, 9,530; and intermediate, 5,515. Grade 3 cohort: pre-emergent, 164; emergent, 132; basic, 1,662; and intermediate, 6,449. Grade 6 cohort: pre-emergent, 101; emergent, 85; basic, 712; and intermediate, 3,960.

Source: Authors' analysis of student-level data from Arizona Department of Education, 2006/07–2011/12.

assessment than English learner students who were not eligible, and the gap widened toward the end of the study. As in the results on the English language arts content test, the largest differences in the final cumulative passing rates on the math knowledge test were between English learner students who were eligible for special education services and those who were not. English learner students who were eligible for special education services at the beginning of the study had low cumulative passing rates on the math test both overall and compared with their peers who were not eligible for special education services (figure 9). Again, this gap was especially apparent in the grade 6 cohort, where only 18 percent of English learner students who were eligible for special education services passed the math test, while 51 percent of their peers who were not eligible to receive special education services passed the math test. Similarly, in the grade 3 cohort, the English learner students who were eligible for special education services had a cumulative passing rate on the math knowledge test of 40 percent, while their peers who were not eligible for special education services had a cumulative passing rate of 73 percent.

With one exception, English learner students eligible for school lunch programs and male English learner students had lower cumulative passing rates in math than English learner students who were not eligible and female students. English learner students who were eligible for school lunch programs had lower cumulative passing rates in math

Figure 9. On the math content test, the differences in the cumulative passing rate between English learner students who were eligible for special education services and those who were not eligible widened over time for all cohorts, 2006/07–2011/12



As in the results on the English language arts content test, the largest differences in the final cumulative passing rates on the math knowledge test were between English learner students who were eligible for special education services and those who were not

Note: The English language proficiency assessment in 2006/07 serves as a baseline, defining the initial population of English learner students for this analysis. Students take content tests in grades 3–8 and in either grade 10 or 11 in high school; there is no test in grade 9, and thus in the grade 6 cohort, there is a flat line between year 3 (grade 8) and year 4 (grade 9). The number of English learner students in each subgroup is as follows. Kindergarten cohort: unknown, 315; eligible for special education services, 1,099; and not eligible for special education services, 15,941. Grade 3 cohort: unknown, 0; eligible for special education services, 1,415, and not eligible for special education services, 6,992. Grade 6 cohort: unknown, 0; eligible for special education services, 1,204; and not eligible for special education services, 3,654.

Source: Authors' analysis of student-level data from Arizona Department of Education, 2006/07–2011/12.

than their ineligible peers. These differences relative to their ineligible counterparts were 7 percentage points in the kindergarten cohort, 5 percentage points in the grade 3 cohort, and 4 percentage points in the grade 6 cohort. In the kindergarten and grade 3 cohorts, male English learner students had lower cumulative math passing rates than their female counterparts: 3 percentage points in the kindergarten cohort and 1 percentage point in the grade 3 cohort. In the grade 6 cohort, male English learner students had a 1 percentage point greater cumulative passing rate than their female counterparts (see figures C5 and C6 in appendix C).

Comparison of cumulative passing rates across tests and cohorts

English learner students across all cohorts and student subgroups scored highest on the English language proficiency test and next highest on the English language arts content test. Across all three tests, the overall cumulative passing rate for each of the three grade-level cohorts was highest for the English language proficiency test, followed by the English language arts content test, and then the math content test (table 1). The same pattern occurred for each characteristic subgroup of English learner students.

Table 1. Cumulative passing rates for each cohort for each type of assessment, 2006/07–2011/12 (percent of students passing the test)

Test	Kindergarten	Grade 3	Grade 6
English language proficiency	91	97	94
English language arts	80	73	51
Math	70	68	43

Note: Number of English learner students in each analytic sample is as follows. Kindergarten cohort: English language proficiency, 16,377; English language arts, 17,351; math, 17,355; grade 3 cohort: English language proficiency, 7,938; English language arts, 8,416; math, 8,407; grade 6 cohort: English language proficiency, 4,287; English language arts, 4,881; math, 4,858.

Source: Authors' analysis of student-level data from Arizona Department of Education, 2006/07–2011/12.

Comparison of cumulative passing rates with Arizona's progress expectations

English learner students did not generally achieve the expected rate of progress of gaining one level per year in English proficiency but rather advanced at different rates. Arizona's annual measurable achievement objective 1 for English learners students—an increase of one English language proficiency level per school year—means that English learner students should have passed Arizona's English language proficiency test within one to four years of the start of the study, depending on the proficiency level at which they started in 2006/07. For example, English learner students who started the study at the pre-emergent level (level 1 of 5) should have been able to achieve reclassification as fluent English proficient students (level 5) within four years of the start of the study.

English learner students in this sample met this progress expectation at different rates according to their cohort and language proficiency level at entry. For example, students making the recommended rate of progress ranged from a low of 27 percent (grade 6 cohort, initial English language proficiency level 3) to a high of 89 percent (grade 3 cohort, initial English language proficiency level 1). In half of the 12 combinations of grade-level cohort and initial English language proficiency level (for example, grade 3 cohort students with initial English language proficiency level 2 or grade 6 cohort students with initial English language proficiency level 4), less than 50 percent of the English learner students achieved the expected rate of progress toward reclassification as fluent English proficient (table A1 in appendix A). Further, all but one of these six lowest percentages occurred for English learner students who started the study at the higher two English language proficiency levels (3 and 4).

English learner students in this sample met Arizona's annual measurable achievement objective 1—an increase of one English language proficiency level per school year—at different rates according to their cohort and language proficiency level at entry

Implications of the study findings

This section includes some implications of the study findings and discusses how they expand on or vary from the findings of previous research.

Study implications

Based on the four study findings that identified four subgroups of English learner students who scored lower on their achievement tests than their counterparts, Arizona may consider devoting additional attention to improving teaching practices and support services to help these underperforming English learner student subgroups. These subgroups include

students in higher grades, students eligible for special education services, students eligible for school lunch programs, and male students.

English learner students who are eligible for special education services. All English learner students who are eligible for special education services will likely need additional supports to be successful, and this support may need to vary by specific subgroups of learning disabilities. English learner students in higher grades who are eligible for special education services will need different support from that given to the grade 6 cohort English learner students during the study period if they are going to achieve even minimal levels of academic achievement in English language arts and math. Further investigations into more effective practices for improving the achievement of English learner students, especially secondary English learner students, who were eligible for special education services appears warranted.

English learner students in higher grades. On the English language arts and math content tests, English learner students in the grade 6 cohort nearly always made less progress than the younger cohorts. English learner students in higher grades may require additional, possibly different, supports if they are to meet at least minimal expectations for academic achievement. Or, perhaps, middle and high school teachers will need additional or different skills than they currently have. Accordingly, secondary teachers may need additional, targeted professional development in order to effectively support the academic English literacy needs of their English learner students in higher grades across the content areas.

English learner students eligible for school lunch programs and male English learner students. There were small but consistent performance differences between English learner students who were eligible for school lunch programs and those who were not and between male and female English learner students. Accordingly, comprehensive supports to improve English learner achievement would likely include supports targeted toward the additional or unique needs of English learner students who are eligible for school lunch programs and English learner students who are male.

State expectations of regular progress in English proficiency may be unrealistic or too rigid. A policy implication is apparent in the findings related to the state's Annual Measurable Achievement Objectives expectations of an increase of one English language proficiency level per school year. This study's findings that across the grade-level cohorts and English language proficiency levels, the percentage of English learner students who met this progress expectation ranged widely from a low of 27 percent (grade 6 cohort, English language proficiency level 3) to a high of 89 percent (grade 3 cohort, English language proficiency level 1). It may be too rigid or simplistic to assume that all English learner students will advance at the same pace. More flexible standards may be more useful to educators.

Three findings expand the current research literature and point to areas for further research

Three of the study findings offer evidence not found within the general research literature.

For all English learner student subgroups, the largest cumulative performance difference was between English learner students who were eligible for special education services and those who were not. English learner students who were eligible for special

All English learner students who are eligible for special education services will likely need additional supports to be successful, and this support may need to vary by specific subgroups of learning disabilities

education services had lower final cumulative passing rates in all three tests than their ineligible counterparts, which is consistent with the research literature (see, for example, Lipka, Siegel, & Vukovic, 2005). For example, the final cumulative passing rates on the math content test for English learner students who were eligible for special education services were the highest for the kindergarten cohort (51 percent) and lowest for the grade 6 cohort (18 percent). This difference of 33 percentage points suggests that on the math content tests, English learner students who were eligible for special education services struggled much more in the higher grade cohorts than in the lower ones. Perhaps this difference is due to difficulties in properly identifying English learner students with disabilities, which distinguishes learning disabilities from the typical language, and often cultural, struggles of a second language learner; these difficulties have been shown to lead to both over- and under-identification (Artiles, Rueda, Salazar, & Higuera, 2005a, b; Rueda & Windmueller, 2006; Sullivan, 2011; Sullivan & Bal, 2013; Zehler, Fleischman, Hopstock, Pendick, & Stephenson, 2003; Zehler, Fleischman, Hopstock, Stephenson et al., 2003). More research is needed in this area.

It was surprising to find that English learner students passed their English language arts content test more quickly for the first time than their math test

Additional research could take into consideration the fact that English learner students who are eligible for special education services cover a diverse set of learning-related disabilities—ranging from autism to hearing impairments to emotional disabilities to traumatic brain injury (Arizona Department of Education, 2012). Separating out the achievement levels of these different groups may provide useful information for how best to support each.

No other studies were identified that attempted to describe the influence of the other student characteristics (English language proficiency level, eligibility for school lunch program, and gender) on the performance of English learner students.

All English learner students had the highest cumulative passing rates on the English language proficiency tests, followed by the English language arts content test, then the math content test. Since no research was found that directly compared English learner students' performance across multiple years on these three types of assessments, this study adds useful research. It seems logical that English learner students would pass their English language proficiency test sooner than their English language arts content area tests. English language proficiency assessments are generally intended to denote the achievement of a level of English literacy sufficient to enable meaningful participation in mainstream English-dominant classes, as the English learner student works toward full academic fluency. English language arts and math content tests are intended to denote a level of content knowledge that helps students achieve full academic English fluency.

It was surprising to find that English learner students passed their English language arts content test more quickly for the first time than their math test. The study team initially expected that English learner students would pass the math content test sooner than the English language arts content test because the team believed that numbers and math operations required a lower level of academic English language literacy than the reading and writing assessed by the English language arts content test. However, research has shown that academic English literacy plays a central role in student achievement on math tests. Perhaps these results indicate that the level of academic English literacy necessary for success on a math assessment is actually similar to or possibly greater than that for an English language arts content test. Or, perhaps, students have greater exposure to English

language arts–related content and skills in their daily four-hour English literacy classes than they do exposure to math content and skills. Or, perhaps English language skills can be gained more easily outside of school than math skills, so English learner students can actually progress faster in English language arts ability than in their more school-centered math ability.

For English learner students in the grade 3 and grade 6 cohorts, passing rate progress on the English language proficiency and math tests slowed toward the end of the study.

No other research was found that showed the performance trends of cohorts of English learner students over time. This study’s finding of a slowing in the rate of passing progress after the first few years of the study period could be due to changes in the composition of the cohort students whose test results were still being measured. The test measures for this study were based on students’ first-time passing of each test. The number of students whose scores were being measured changed over the course of the study because only the scores of the non-passing English learner students remained each year. For example, because of this change in the composition of the English learner students whose scores were being measured as the years progressed, there were probably greater percentages of students eligible for special education services and school lunch programs and who had lower English language proficiency levels. That is, English learner students who were less at risk likely attained passing levels faster than students who were more at risk; hence, by the end of the study, it may have been harder for the remaining students to achieve passing levels, because they had more risk factors than those who had passed in previous years.

Perhaps the slowing in the rate of passing progress was caused by English learner student attitudes toward the tests. Repeated failure may lead to frustration and less motivation to do well. Another reason might be related to the increase in difficulty of the tests as the grade level rises. Further research is needed to determine whether these findings hold up in other contexts and, if so, why.

Three findings were not consistent with the research literature and point to areas for additional research

Three of the study findings were not consistent with the general research literature. These findings point to areas for additional research to better understand the discrepancies between this study’s results and the current research base.¹

On the math assessment, female English learner students sometimes achieved higher levels of proficiency than male students.

This finding is somewhat inconsistent with the research literature on math achievement for the general (non-English learner) student population, which shows slightly higher math achievement for male than female students (McGraw et al., 2006; Perie et al., 2005). This study’s particular results may show that English learner students experience math assessments differently than native English speakers. Specifically, they may point to the possibility that academic English literacy may play a central role in math assessments for English learner students (Abedi & Lord, 2001; Beal, Adams, & Cohen, 2010; Martiniello, 2008, 2009; Moschkovich, 1999, 2002; Shaftel, Belton-Kocher, Glasnapp, & Poggio, 2006)—a role that is a larger influence on score results for them than for native English speakers. Thus, the higher math performance of female English learner students may then be due to their greater English language abilities, a skill area in which the research shows female students generally outperform male

students (Perie et al., 2005; Robinson & Theule, 2011). Likewise, for this study, female English learner students attained higher cumulative passing rates on the English language proficiency and English language arts content tests, which in turn could also have helped them attain higher results on the math content test.

On the English language proficiency test, the English learner students in the kindergarten cohort had the lowest final cumulative reclassification rate. This finding is not fully consistent with the research literature, which shows that English learner students in lower grades generally make greater achievement progress than their counterparts in higher grades. It is unclear why this study's English language proficiency test results turned out as they did, while the results for the English language arts and math content tests were consistent with the research literature (that is, the kindergarten cohort outperformed the higher grade-level cohorts). However, three observations regarding the English language proficiency data should be noted. First, as a whole, all three grade-level cohorts had final cumulative reclassification rates over 90 percent on the English language proficiency test. Second, the difference in the final overall cumulative reclassification rates on the English language proficiency tests across the three cohorts was 6 percentage points or less, which was smaller than most of the differences observed on the English language arts and math content tests. Third, the first-year reclassification rates on the English language proficiency test were also lowest for the kindergarten cohort; this might indicate that more English learner students in the grade 3 and 6 cohorts were ready to pass the English language proficiency test, which could have affected the cumulative reclassification rate even after five years.

Research is needed to examine why English learner students in higher grades lag behind younger ones in their performance on the content tests but not on the English language proficiency test

Further research might help identify which specific English skills to target in supporting English learner students. Additional research could be done to examine English language proficiency subtest differences across the four tested domains of listening, speaking, reading, and writing. In addition, it is important to explore why some English learner students in higher grades performed better on the English language proficiency test than students in lower grades, to help inform possible changes in practice or additional interventions to improve the academic performance of the English learner students in lower grades. Further research might also illuminate positive practices that have led to the possible greater-than-expected English language proficiency achievement of the English learner students in higher grades.

In addition, research is needed to examine possible reasons why English learner students in higher grades lag behind younger ones in their performance on the content tests but not on the English language proficiency test. In Arizona, this may be due to the greater difficulty of the content tests in the higher grade levels compounded by the loss of time devoted to content areas among English learner students, who are required to spend four hours a day in structured English immersion classes until they are reclassified as fluent English proficient and assigned to mainstream content classes. The results from this type of research could provide more precise understandings of English learner achievement progress and how to better target supports within Arizona's current English language development programs.

English language students with lower initial English language proficiency levels often had higher cumulative passing rates than their counterparts who had higher initial proficiency levels. This finding may deviate from the research literature partly because of

the differing percentages of each cohort's students across the different English language proficiency levels who were eligible for special education services. For instance, in both the grade 3 and grade 6 cohorts, a higher percentage of students who had an English language proficiency level of basic (level 3 of 5) were eligible for special education services in 2006/07 compared with those who were at the two lowest English language proficiency levels (pre-emergent and emergent; see tables B4 and B5 in appendix B). In addition, a higher percentage of the English learner students in the grade 6 cohort who started at the intermediate level (level 4) were eligible for special education services in 2006/07 compared with those at the pre-emergent group (level 1; see table B5 in appendix B). Further analyses of subgroup characteristic differences, such as the different percentages of English learner students eligible for special education services across the English language proficiency levels, could help clarify why English learner students who were initially at the higher English language proficiency levels often performed worse than English learner students who were initially at the lower English language proficiency levels.

This performance difference might also have been due to the possibility that lower English language proficiency level students were newer English learner students with stronger education and literacy in their native language (Collier, 1992, 1989). It may also be worth examining whether students at higher English language proficiency levels are long-term English learner students who may be less motivated to pass their English language arts and math content tests than new English learner students at lower English language proficiency levels. A study looking at additional characteristics of English learner students who make up each English language proficiency level subgroup—such as ethnicity, parental education, length of time in the United States, level of native language fluency, and/or attitudes toward school—might help explain the different cumulative passing levels.

Limitations of the study

There were two limitations to this study. The first relates to the scope of the sample. The study addresses the progress of English learner students in three cohorts for which test score data were available for each school year over the six school-year period of the study and who advanced a grade level each year. Thus, the sample excludes mobile students who left or entered the state during the study period. It also excludes students who repeated or skipped a grade, due to difficulties tracking students who did not progress with the rest of their grade-level cohort. As a result, this sample is a more stable group of English learner students than is the case in most schools. Thus, the cumulative passing rates on the English proficiency test and the English language arts and math content tests could be higher than for the English learner population as a whole. The cohorts were chosen for their importance in the development and school experience of English learner students, K–12. No statistical tests were performed. Thus, the findings are not directly comparable to those for other contexts.

To address the possibility that the study sample may differ from the English learner population as a whole, table B2 in appendix B shows the following comparisons of the analytic sample to the entire sample of English learner students in 2006/07: the number of English learner students in the analytic sample and in the sample of all English learner students; the percentage that the analytic sample is within the sample of all English learner students; and the percentage of each of the student characteristics examined in the study for both the analytic sample and the sample of all English learner students.

It may be worth examining whether students at higher English language proficiency levels are long-term English learner students who may be less motivated to pass their English language arts and math content tests than new English learner students at lower English language proficiency levels

The second limitation relates to comparisons among cohorts based on differences in sample characteristics and in content test-taking opportunities. First, there are likely to be differences in the characteristics of the students in the kindergarten, grade 3, and grade 6 cohorts, especially related to initial English language proficiency level. For English learner students in the kindergarten cohort, kindergarten was their initial enrollment year in Arizona, and their English language proficiency level was their initial English language proficiency level when they started school (which was when the study began for the kindergarten cohort). For English learner students in the grade 3 and grade 6 cohorts, their English language proficiency level was their level at the start of the study. However, it is not known when these English learner students started school in Arizona nor their initial English language proficiency level when they started school. Furthermore, the composition of the kindergarten, grade 3, and grade 6 cohorts could be different because of differences in student mobility and grade repetition across cohorts.

The grade 3 and grade 6 cohorts could also be different in that, compared with the kindergarten cohort, they are likely composed of the students who had the most difficulty learning English, since faster learners would have already achieved reclassification as fluent English proficient students and therefore would not be among the grade 3 and 6 cohorts. For example, in the grade 6 cohort, there were higher percentages of English learner students eligible for special education services than in the grade 3 and kindergarten cohorts. Those higher percentages could be due to grade 6 students having had more opportunities in previous grades to be identified as needing special education services. They could also be due to the fact that the English learner students who more quickly achieved reclassification as fluent English proficient were no longer among the English learner students by the time they reached grade 6 (or a combination of both).

As a group, English learner students who were eligible for special education services had lower cumulative passing rates than their peers who were not eligible (see figures 3, 6, and 9). By contrast, in kindergarten, the faster English learner students (who, as noted earlier, are likely English learner students with fewer risk factors) had not yet been given a chance to achieve reclassification as fluent English proficient and thus were still in the cohort at the start of the study. Also, differences in English learner student achievement percentages across the three cohorts are likely influenced by differences in the content of the tests, because each state increases the difficulty of its English language proficiency and English language arts content tests as the grade level increases. Further, during the study period students in the kindergarten cohort had fewer opportunities to take, and therefore to pass, their state English language arts content test, which is first administered in grade 3 in Arizona. However, while these factors are all limitations of the study, they also reflect the actual experience of English learner students over time in the state system.

Appendix A. Arizona programs that provide context for the study

To provide context for the analysis in this report, this appendix describes Arizona's process for identifying students who are eligible for special education services and for identifying students as English learner students; the state's English language proficiency test and levels, English language arts and math content tests and achievement levels, and English learner support programs; and how Arizona (and other states) defines making progress in learning English. These descriptions provide a context for the state analysis and are not intended as evaluations of the state programs or assessments.

Identifying students who are eligible for special education services

Children are eligible for special education services if they are determined to have a learning disability under the Individuals with Disabilities Education Act of 2004, 34 C.F.R. Secs. 300 et al., and Section 504 of the Rehabilitation Act of 1973. Arizona's procedures for making this determination are intended to comply with these federal statutes, Arizona state statutes, and the Arizona administrative code. The procedures are described in *AZ-TAS: Evaluation and Eligibility: Process and Procedures from Referral to Determination of Eligibility* (Arizona Department of Education, 2012). The steps in the process of determining whether students have a learning disability and are eligible for special education services include:

- Proactive efforts by public education agencies to identify, locate, and evaluate students with disabilities within their jurisdictions.
- Use of pre-referral interventions to assist students who may have a disability to improve their school success.
- Referral of students who may have a disability who did not respond sufficiently to pre-referral services, for a full evaluation initiated by a child's parent or public education agency staff member.
- Convening of an evaluation team that:
 - Reviews existing information on the child's progress;
 - Collects and reviews additional functional, developmental, and academic information following reasonable efforts to obtain parent consent to collect this information along with parent input and teacher recommendations; and
 - Determines, along with the parent(s), whether the student has a learning disability that impacts learning and whether there is a need for specially designed instruction.

The specially designed instruction for each student is set forth in an individualized education program. Accommodations or additional supports for language needs for English learner students are made on an individual basis by each evaluation team. Each English learner student's evaluation team determines the degree to which the individualized education program alters his or her participation in Arizona's daily four-hour Structured English Immersion program (described below).

Identifying students for an English learner program

As required by Title III of the Elementary and Secondary Education Act of 2001, each state must distribute a home language survey to all students when they first enroll in the state's public schools. The schools must assess the English proficiency of all students whose

parents or guardians report that a language other than English is spoken at home. Arizona administers its own version of a home language survey and uses its English language proficiency test, the Arizona English Language Learner Assessment (AZELLA), to make the initial determination of whether a student should be classified as an English learner. Students whose parents or guardians report that a language other than English is spoken at home and who do not pass the English language proficiency test are classified as English learners.

English language proficiency tests and subject matter content tests

The AZELLA is the English language proficiency test developed to test students in five grade spans (K, 1–2, 3–5, 6–8, and 9–12) in four domains: listening, writing, reading, and speaking. Each domain and an aggregated overall score have five levels of proficiency—pre-emergent (level 1), emergent (level 2), basic (level 3), intermediate (level 4), and proficient (level 5). During the study period, students had to achieve a composite score of proficient across the four tested domains to be reclassified as fluent English proficient students. Arizona administers the AZELLA each spring, and English learner students may take the AZELLA up to an additional two times per year, if their teacher recommends it.

Arizona’s Instrument to Measure Standards (AIMS) test measures whether a student meets academic content standards that define end-of-year expectations. Two of the content areas are English language arts and math—the two subject matter tests referred to throughout this study. Students take the AIMS test in grades 3–8 and high school. High school students take the test until they pass each section, beginning in grade 10. AIMS tests have four performance categories: falls far below the standards; approaches the standards; meets the standards; and exceeds the standards. Students must score at or above the category of meets the standards to pass the English language arts and math content tests. Arizona administers the AIMS test each spring.

Types of English learner support programs

By state law, beginning in the 2008/09 school year, Arizona has required that all English learner students be taught in a structured English immersion model for four hours per day (Arizona Revised Statute 15–756.01). Students are generally grouped into English immersion classrooms based on grade level and their AZELLA composite proficiency level scores; however, this grouping depends on the size of the English learner student population within the school. Schools with higher percentages of English learner students place their English learner students in immersion classrooms for the entire school day (Rios-Aguilar, Gonzalez-Canche, & Moll, 2010); these English learner students do not participate in mainstream classrooms with non-English learner students. Schools without enough English learner students to fill an immersion classroom place English learner students in mainstream classrooms and an individual language learner plan is created for each student to supply the four hours of instruction in English (Rios-Aguilar et al., 2010). Schools with smaller English learner student populations may also mix the English learner students with students with different English proficiency and grade levels.

The types of instruction for the English immersion model’s four hours of English language development are distinct from other content, such as math, science, and social science. According to the statute that mandates the structured English immersion program, the

instruction must focus on pronunciation and on the internal structure of words, syntax, vocabulary, and semantics; in addition, a specific number of minutes must be spent on each language instruction component (for example, 60 minutes of grammar instruction for English learner students at the two lowest English language proficiency levels in the elementary grades). As a result of these requirements, English learner students generally do not participate in math and English language arts content classes while they are required to participate in the daily four-hour English immersion classes. Thus, English learner students learn specific math and English language arts content, or any other subject matter content, based on the degree to which their teacher incorporates it into their structured English immersion curriculum. For example, a structured English immersion teacher could analyze math or English language arts texts during the grammar instruction time.

Guidelines for making progress in learning English

States have discretion to determine what is considered “making progress in learning English” under the annual measurable achievement objective 1 (AMAO 1) requirements of Title III of the Elementary and Secondary Education Act of 2001. According to an American Institutes for Research brief prepared for the U.S. Department of Education in May 2010, half of the states with sufficient documentation of their classification criteria (17 of 34 states examined in the study) defined AMAO 1 progress as advancing one English language proficiency level (or more) per school year until scoring at the required English language proficiency level for reclassification as fluent English proficient (Boyle, Taylor, Hurlburt, & Soga, 2010).

Arizona defines AMAO 1 progress as progressing at least one English language proficiency level per school year (Arizona Department of Education, 2011). The other half of the 34 states in the American Institutes for Research brief defined progress as various rates of less than one English language proficiency level per school year. At the faster rate of one English language proficiency level per school year, English learner students would be expected to achieve reclassification as fluent English proficient within one to four years, depending on their initial English language proficiency level. In Arizona, less than half the English learner students in the three cohorts met the AMAO 1 expectations over the period of the study (table A1).

Table A1. Progress of English learner students in meeting Arizona’s annual measurable achievement objective 1, by initial English language proficiency level and cohort, 2006/07–2011/12

English language proficiency level in 2006/07	AMAO 1		Kindergarten cohort (%)		Grade 3 cohort (%)		Grade 6 cohort (%)	
	Expected years to reclassification as fluent English proficient student	Target year	Cumulative passing rate by AMAO1 expected year	Actual cumulative passing rates at the end of the study	Cumulative passing rate by AMAO1 expected year	Actual cumulative passing rates at the end of the study	Cumulative passing rate by AMAO1 expected year	Actual cumulative passing rates at the end of the study
1 (pre-emergent)	4	2010/11	63	78	89	92	81	87
2 (emergent)	3	2009/10	44	79	73	95	70	88
3 (basic)	2	2008/09	54	90	36	90	27	78
4 (intermediate)	1	2007/08	34	96	45	99	38	96

AMAO 1 is annual measurable achievement objective 1, which set an expectation of increasing one English language proficiency level per school year for English learner students.

Source: Authors’ analysis of student-level data from Arizona Department of Education, 2006/07–2011/12.

Appendix B. Data and methodology

This appendix describes construction of the analytic samples and explains how the data were analyzed.

Analytic sample

Students were grouped into three analytic grade-level cohorts based on their 2006/07 grade level: kindergarten, grade 3, and grade 6. Within each cohort, students' initial English language proficiency level was determined based on the 2006/07 English language proficiency test. Thus, 2006/07 was the English learner baseline identification year, and English learner student proficiency progress was initially measured in 2007/08. For the English language arts and math content tests, English learner student achievement progress was measured from the first year of the study, 2006/07 (box B1).

For each grade-level cohort, the analytic sample was based on the following criteria (a student was included in the analytic sample if the student met criteria 1–3 below, as well as either 4a, 4b, or 4c):

1. Was in the data system in all six school years, 2006/07–2011/12.
2. Had an initial English language proficiency assessment score lower than proficient in 2006/07.
3. Started from the cohort grade (K, 3, or 6) in 2006/07 and had normal grade progress (no grade repeaters or grade skippers) through 2011/12.

and either

- 4a. For the English language proficiency-level assessment analysis, achieved English language proficiency assessment level for reclassification as fluent English proficient or took the English language proficiency assessment in the last school year (2011/12).

or

- 4b. For the English language arts analysis, had state English language arts content test results in each year the test was administered during the study period.

or

- 4c. For the math analysis, had state math content test results in each year the test was administered during the study period.

Box B1. Timing of proficiency, language arts, and math tests

The analytic period differed for the English language proficiency test and the subject matter content tests. For the English language proficiency analysis, 2006/07 was the baseline year for the identification of the English language proficiency level subgroups because there were no English language proficiency level data prior to 2006/07 across three states, Arizona, Nevada, and Utah, which were required for parallel reports that were part of this analysis. English language proficiency progress was measured forward from that point. Thus, in the English language proficiency analysis, 2007/08 represented the first year of measured progress, and 2011/12 the final year, for a total of five school years. For the subject matter content tests, students classified as English learner students in 2006/07 were identified, and their achievement levels from 2006/07 through 2011/12 examined, for a total of six years.

In sum, the analytic sample included all students identified as English learner students who were enrolled in the state’s public schools in the designated grade of the first year of the cohort, who progressed to the next grade level each year, and who had the required test data throughout the six school years analyzed. Each cohort consisted of a separate sample of students. For example, the students in the grade 3 cohort were English learner students who enrolled in an Arizona public school in grade 3 in 2006/07, progressed to the next grade level each year, and had the required Arizona test score data through grade 8 in 2011/12.

Due to these criteria for inclusion, the sample excluded mobile students who left or entered the state during the study period. Grade repeaters or skippers were excluded because tests differ by grade level. Thus, it is not accurate to annually aggregate test results across a cohort of students when students are taking different grade-level tests, such as a second grade repeater and a third grader in the same year. Further, it is difficult to track students who did not progress with the rest of their grade-level cohort, which would require states to provide additional years of data to account for only a small percentage of students.

The numbers and percentages for English learner students who did not make normal grade progress were—kindergarten cohort, 1,576 (5.4 percent); grade 3 cohort, 414 (2.9 percent); and grade 6 cohort, 330 (3.8 percent).

Hence, because the final sample was a more geographically stable population, the proficiency rates and passing rates could be higher than for the English learner population as a whole. Limitations due to the characteristics of the analytic sample and other issues are described in the limitations section of the report.

The steps for preparing the student samples for each of the three assessments (English proficiency, English language arts content, and math content) are described in table B1.

Data and analysis

The data include student-level data from school years 2006/07 through 2011/12. Data were analyzed in the three parallel grade-span cohorts: kindergarten through grade 5, grade 3 through grade 8, and grade 6 through grade 11. To address the research questions, annual, cumulative numbers and percentages of English learner students who met each progress criterion were calculated and grouped by grade-level cohort (an analytical method recommended by Cook et al., 2012). At the start of the study (2006/07), analyses were conducted for each English learner grade-level cohort as a whole, as well as by the four student characteristics: English language proficiency level, eligibility for special education services, eligibility for federal school lunch programs, and gender. The similarities and differences across the three cohorts were also explored.

Note that Arizona administers its English language arts and math content tests starting in grade 3. In high school, Arizona does not administer content tests in grade 9. Therefore, the kindergarten cohort has results for grades 3–5, and the grade 6 cohort has the same cumulative passing rates in grades 8 and 9 (as seen in figures 4–9).

Table B1. Steps to getting an analytic sample for each test

Cohort	Step	Sample category	Sample for English learner proficiency test		Sample for English language arts content test		Sample for math content test	
			Number	Percent	Number	Percent	Number	Percent
Kindergarten	Start point	English learner students in 2006/07 (initial English language proficiency level < 5)	28,952	100	28,952	100	28,952	100
	Step 1	Students excluded because of no data for all 6 years	9,701	34	9,701	34	9,701	34
	Step 2	Students excluded because of abnormal grade progress	1,576	5	1,576	5	1,576	5
	Step 3	Students excluded because of missing values	1,298	5	324	1	320	1
	End point	Analytic sample	16,377	57	17,351	60	17,355	60
Grade 3	Start point	English learner students in 2006/07 (initial English language proficiency level < 5)	14,068	100	14,068	100	14,068	100
	Step 1	Students excluded because of no data for all 6 years	4,568	33	4,568	33	4,568	33
	Step 2	Students excluded because of abnormal grade progress	414	3	414	3	414	3
	Step 3	Students excluded because of missing values	1,148	8	670	5	679	5
	End point	Analytic sample	7,938	56	8,416	60	8,407	60
Grade 6	Start point	English learner students in 2006/07 (initial English language proficiency level < 5)	8,659	100	8,659	100	8,659	100
	Step 1	Students excluded because of no data for all 6 years	2,511	29	2,511	29	2,511	29
	Step 2	Students excluded because of abnormal grade progress	330	4	330	4	330	4
	Step 3	Students excluded because of missing values	1,531	18	937	11	960	11
	End point	Analytic sample	4,287	50	4,881	56	4,858	56

Note: Percentages might not total to 100 because of rounding.

Source: Authors' analysis of student-level data from Arizona Department of Education, 2006/07–2011/12.

Characteristics of students in the sample and the cohorts

The characteristics of students in the analytic samples and the entire initial English learner student population are shown in table B2.

The characteristics of students in the analytic samples by initial English language proficiency level in the three cohorts—kindergarten, grade 3, and grade 6—are given in tables B3–B5.

Table B2. Characteristics of students in the analytic samples and the entire initial English learner student population

Cohort	Student characteristic	Sample for English learner proficiency test		Sample for English language arts content test		Sample for math content test		Initial English learner student population in 2006/07		
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Kindergarten	Gender									
	Female	8,204	50	8,586	50	8,591	50	14,127	49	
	Male	8,173	50	8,765	51	8,764	51	14,825	51	
	Eligibility for school lunch program in 2006/07									
	Unknown	279	2	315	2	315	2	571	2	
	Not eligible	3,082	19	3,353	19	3,353	19	5,970	21	
	Eligible	13,016	80	13,683	79	13,687	79	22,411	77	
	Eligibility for special education services in 2006/07									
	Unknown	279	2	315	2	315	2	571	2	
	Not eligible	15,194	93	15,936	92	15,941	92	26,360	91	
	Eligible	904	6	1,100	6	1,099	6	2,021	7	
	Initial English language proficiency level in 2006/07									
	Pre-emergent	857	5	902	5	901	5	2,207	8	
	Emergent	1,323	8	1,409	8	1,409	8	2,925	10	
	Basic	8,991	55	9,525	55	9,530	55	15,482	54	
	Intermediate	5,206	32	5,515	32	5,515	32	8,338	29	
	Total number of students	16,377		17,351		17,355		28,952		
	Grade 3	Gender								
		Female	3,735	47	3,857	46	3,849	46	6,393	45
		Male	4,203	53	4,559	54	4,558	54	7,675	55
Eligibility for school lunch program in 2006/07										
Unknown		170	2	0	0	0	0	340	2	
Not eligible		1,091	14	1,245	15	1,243	15	2,083	15	
Eligible		6,677	84	7,171	85	7,164	85	11,645	83	
Eligibility for special education services in 2006/07										
Unknown		170	2	0	0	0	0	340	2	
Not eligible		6,816	86	7,000	83	6,992	83	11,528	82	
Eligible		952	12	1,416	17	1,415	17	2,200	16	
Initial English language proficiency level in 2006/07										
Pre-emergent		176	2	164	2	164	2	610	4	
Emergent		123	2	133	2	132	2	433	3	
Basic		1,397	18	1,667	20	1,662	20	3,099	22	
Intermediate		6,242	79	6,452	77	6,449	77	9,926	71	
Total number of students		7,938		8,416		8,407		14,068		

(continued)

Table B2. Characteristics of students in the analytic samples and the entire initial English learner student population (continued)

Cohort	Student characteristic	Sample for English learner proficiency test		Sample for English language arts content test		Sample for math content test		Initial English learner student population in 2006/07	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Grade 6	Gender								
	Female	1,889	44	2,126	44	2,113	44	3,731	43
	Male	2,398	56	2,755	56	2,745	57	4,928	57
	Eligibility for school lunch program in 2006/07								
	Unknown	72	2	0	0	0	0	184	2
	Not eligible	594	14	710	15	705	15	1,244	14
	Eligible	3,621	85	4,171	86	4,153	86	7,231	84
	Eligibility for special education services in 2006/07								
	Unknown	72	2	0	0	0	0	184	2
	Not eligible	3,490	81	3,672	75	3,654	75	6,510	75
	Eligible	725	17	1,209	25	1,204	25	1,965	23
	Initial English language proficiency level in 2006/07								
	Pre-emergent	105	2	100	2	101	2	352	4
	Emergent	82	2	87	2	85	2	287	3
	Basic	556	13	716	15	712	15	1,572	18
	Intermediate	3,544	83	3,978	82	3,960	82	6,448	75
	Total number of students	4,287		4,881		4,858		8,659	

Note: Percentages might not sum to 100 because of rounding.

Source: Authors' analysis of student-level data from Arizona Department of Education, 2006/07–2011/12.

Table B3. Characteristics of students in the analytic samples by initial English language proficiency level in kindergarten cohort

Assessment	Characteristic	Pre emergent		Emergent		Basic		Intermediate		
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	
English language proficiency	Gender									
	Female	434	51	620	47	4,403	49	2,747	53	
	Male	423	49	703	53	4,588	51	2,459	47	
	Eligibility for school lunch program in 2006/07									
	Unknown	4	1	17	1	123	1	135	3	
	Not eligible	126	15	197	15	1,452	16	1,307	25	
	Eligible	727	85	1,109	84	7,416	83	3,764	72	
	Eligibility for special education services in 2006/07									
	Unknown	4	1	17	1	123	1	135	3	
	Not eligible	803	94	1,199	91	8,328	93	4,864	93	
	Eligible	50	6	107	8	540	6	207	4	
	Total number of students	857		1,323		8,991		5,206		
	English language arts	Gender								
Female		455	50	633	45	4,596	48	2,902	53	
Male		447	50	776	55	4,929	52	2,613	47	
Eligibility for school lunch program in 2006/07										
Unknown		4	0	20	1	138	1	153	3	
Not eligible		130	14	211	15	1,595	17	1,417	26	
Eligible		768	85	1,178	84	7,792	82	3,945	72	
Eligibility for special education services in 2006/07										
Unknown		4	0	20	1	138	1	153	3	
Not eligible		830	92	1,252	89	8,727	92	5,127	93	
Eligible		68	8	137	10	660	7	235	4	
Total number of students		902		1,409		9,525		5,515		
Math		Gender								
	Female	455	51	633	45	4,600	48	2,903	53	
	Male	446	50	776	55	4,930	52	2,612	47	
	Eligibility for school lunch program in 2006/07									
	Unknown	4	0	20	1	138	1	153	3	
	Not eligible	130	14	211	15	1,595	17	1,417	26	
	Eligible	767	85	1,178	84	7,797	82	3,945	72	
	Eligibility for special education services in 2006/07									
	Unknown	4	0	20	1	138	1	153	3	
	Not eligible	829	92	1,252	89	8,733	92	5,127	93	
	Eligible	68	8	137	10	659	7	235	4	
	Total number of students	901		1,409		9,530		5,515		

Note: Percentages might not sum to 100 because of rounding.

Source: Authors' analysis of student-level data from Arizona Department of Education, 2006/07–2011/12.

Table B4. Characteristics of students in the analytic samples by initial English language proficiency level in grade 3 cohort

Assessment	Characteristic	Pre emergent		Emergent		Basic		Intermediate	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
English language proficiency	Gender								
	Female	82	47	63	51	602	43	2,988	48
	Male	94	53	60	49	795	57	3,254	52
	Eligibility for school lunch program in 2006/07								
	Unknown	0	0	0	0	29	2	141	2
	Not eligible	36	21	15	12	154	11	886	14
	Eligible	140	80	108	88	1,214	87	5,215	84
	Eligibility for special education services in 2006/07								
	Unknown	0	0	0	0	29	2	141	2
	Not eligible	165	94	112	91	1,017	73	5,522	89
	Eligible	11	6	11	9	351	25	579	9
	Total number of students	176		123		1,397		6,242	
	English language arts	Gender							
Female		76	46	65	49	664	40	3,052	47
Male		88	54	68	51	1,003	60	3,400	53
Eligibility for school lunch program in 2006/07									
Not eligible		31	19	14	11	203	12	997	16
Eligible		133	81	119	90	1,464	88	5,455	85
Eligibility for special education services in 2006/07									
Not eligible		150	92	111	84	1,068	64	5,671	88
Eligible		14	9	22	17	599	36	781	12
Total number of students		164		133		1,667		6,452	
Math	Gender								
	Female	76	46	65	49	660	40	3,048	47
	Male	88	54	67	51	1,002	60	3,401	53
	Eligibility for school lunch program in 2006/07								
	Not eligible	31	19	14	11	202	12	996	15
	Eligible	133	81	118	89	1,460	88	5,453	85
	Eligibility for special education services in 2006/07								
	Not eligible	150	92	110	83	1,063	64	5,669	88
	Eligible	14	9	22	17	599	36	780	12
	Total number of students	164		132		1,662		6,449	

Note: Percentages might not sum to 100 because of rounding.

Source: Authors' analysis of student-level data from Arizona Department of Education, 2006/07–2011/12.

Table B5. Characteristics of students in the analytic samples by initial English language proficiency level in grade 6 cohort

Assessment	Characteristic	Pre emergent		Emergent		Basic		Intermediate		
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	
English language proficiency	Gender									
	Female	53	51	43	52	238	43	1,555	44	
	Male	52	50	39	48	318	57	1,989	56	
	Eligibility for school lunch program in 2006/07									
	Unknown	0	0	0	0	10	2	62	2	
	Not eligible	14	13	12	15	83	15	485	14	
	Eligible	91	87	70	85	463	83	2,997	85	
	Eligibility for special education services in 2006/07									
	Unknown	0	0	0	0	10	2	62	2	
	Not eligible	105	100	81	99	412	74	2,892	82	
	Eligible	0	0	—	1	134	24	590	17	
	Total number of students	105		82		556		3,544		
	English language arts	Gender								
Female		55	55	47	54	297	42	1,727	43	
Male		45	45	40	46	419	59	2,251	57	
Eligibility for school lunch program in 2006/07										
Not eligible		13	13	13	15	102	14	582	15	
Eligible		87	87	74	85	614	86	3,396	85	
Eligibility for special education services in 2006/07										
Not eligible		98	98	82	94	447	62	3,045	77	
Eligible		—	2	5	6	269	38	933	24	
Total number of students		100		87		716		3,978		
Math	Gender									
	Female	55	55	47	55	292	41	1,719	43	
	Male	46	46	38	45	420	59	2,241	57	
	Eligibility for school lunch program in 2006/07									
	Not eligible	13	13	13	15	101	14	578	15	
	Eligible	88	87	72	85	611	86	3,382	85	
	Eligibility for special education services in 2006/07									
	Not eligible	99	98	80	94	443	62	3,032	77	
	Eligible	—	2	5	6	269	38	928	23	
	Total number of students	101		85		712		3,960		

— is an *n* of less than 3.

Note: Percentages might not sum to 100 because of rounding.

Source: Authors' analysis of student-level data from Arizona Department of Education, 2006/07–2011/12.

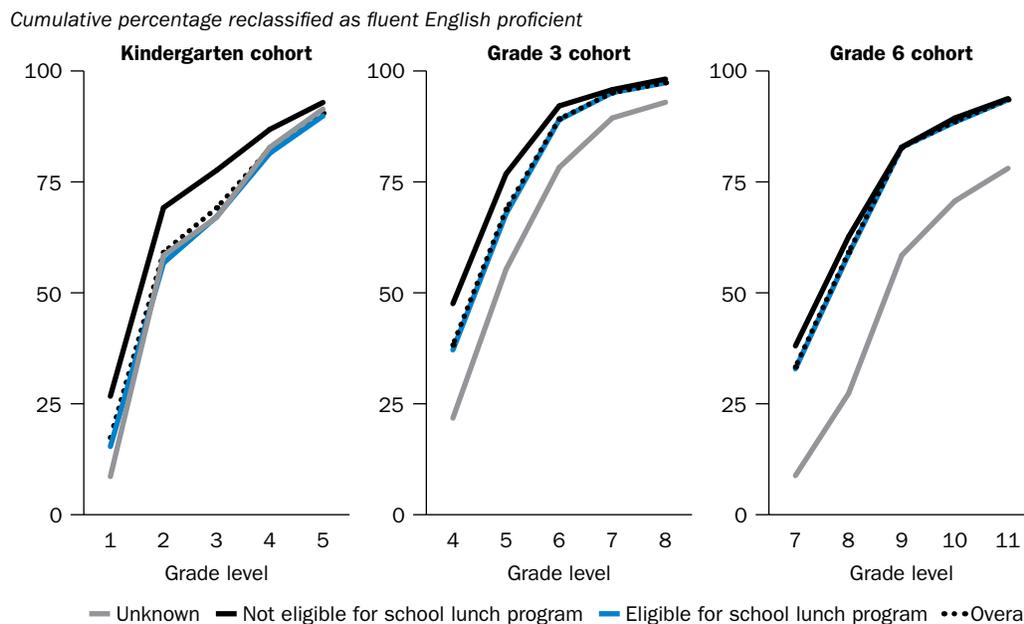
Appendix C. Additional findings

This appendix presents additional findings related to English learner students' cumulative rates of achieving reclassification as fluent English proficient, of passing Arizona's English language arts content test, and of passing Arizona's math content test based on eligibility for school lunch programs and gender.

English language proficiency

For the kindergarten cohort, English learner students who were eligible for school lunch programs at the start of the study had lower cumulative rates of reclassification as fluent English proficient than English learner students who were not eligible for school lunch programs; however, after five years the differences narrowed. English learner students who were eligible for school lunch programs had final lower cumulative rates of reclassification as fluent English proficient (that is, passing Arizona's English language proficiency test) than English learner students who were not eligible for school lunch programs; the difference was 3 percentage points or less in all three grade-level cohorts. For the kindergarten cohort, both subgroups had a cumulative rate of 90 percent or higher (figure C1). For the grade 3 and 6 cohorts, English learner students who were eligible for school lunch programs at the start of the study had similar cumulative rates of achieving

Figure C1. For all three cohorts, the differences in rates of reclassification as fluent English proficient narrowed over the course of the study between English learner students who were eligible for school lunch programs and those who were not eligible, 2006/07–2011/12



Note: The English language proficiency assessment in 2006/07 serves as a baseline, defining the initial population of English learner students for this analysis. The number of English learner students in each subgroup is as follows. Kindergarten cohort: eligible for school lunch program, 13,016; not eligible, 3,082. Grade 3 cohort: eligible for school lunch program, 6,677; not eligible, 1,091. Grade 6 cohort: eligible for school lunch program, 3,621; not eligible, 594.

Source: Authors' analysis of student-level data from Arizona State Office of Education, 2006/07–2011/12.

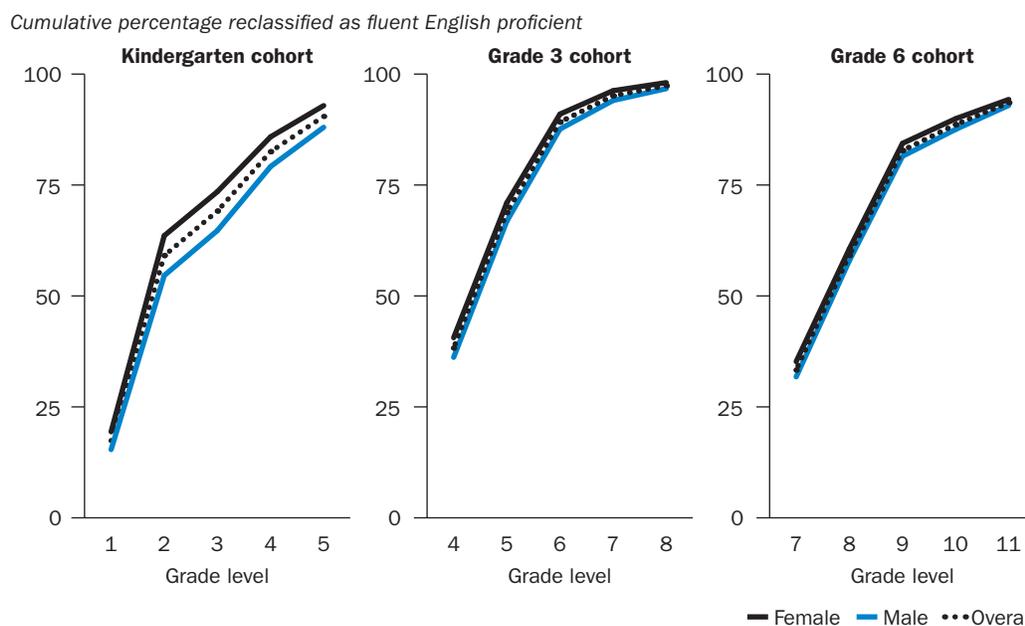
reclassification as fluent English proficient as English learner students who were not eligible. After five years, the differences between them were small.

For all three cohorts, female English learner students had higher cumulative rates of reclassification as fluent English proficient than male English learner students; after five years the differences were 5 percentage points or less. For the grade 6 cohort, 94 percent of female English learner students achieved reclassification as fluent English proficient, compared with 93 percent of male English learner students—a difference of 1 percentage point (figure C2). The difference in the final cumulative percentages of female and male English learner students achieving reclassification as fluent English proficient was greatest in the kindergarten cohort, at 5 percentage points. For the grade 3 cohort, the difference was 1 percentage point.

English language arts

For all three cohorts, English learner students who were eligible for school lunch programs at the start of the study had lower cumulative passing rates on Arizona’s English language arts content test than English learner students who were not eligible for school lunch programs; after six years the differences remained similar. For the kindergarten cohort, English learner students who were eligible for school lunch programs had a final cumulative passing rate of 79 percent on the English language arts content test, compared with 85 percent for English learner students who were not eligible for school lunch programs (figure C3). The difference in the final cumulative English language arts passing

Figure C2. For the kindergarten cohort, the difference in rates of reclassification as fluent English proficient between female and male students was larger than in the grade 3 and 6 cohorts, 2006/07–2011/12



Note: The English language proficiency assessment in 2006/07 serves as a baseline, defining the initial population of English learner students for this analysis. The number of English learner students in each subgroup is as follows. Kindergarten cohort: female, 8,204; male, 8,173. Grade 3 cohort: female, 3,735; male, 4,203. Grade 6 cohort: female, 1,889; male, 2,398.

Source: Authors’ analysis of student-level data from Arizona State Office of Education, 2006/07–2011/12.

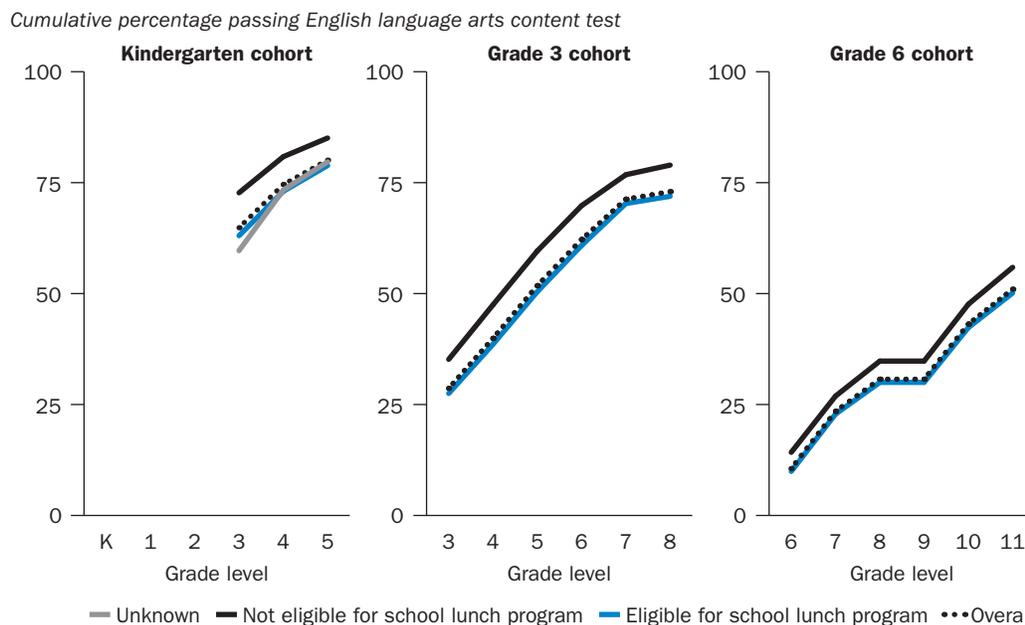
rates for the kindergarten cohort was 6 percentage points, compared with the initial difference of 10 percentage points (based on results on the first English language arts content test given to the kindergarten cohort during grade 3).

For all three cohorts, female English learner students had higher cumulative passing rates on the English language arts test than male English learner students; after six years, the differences remained similar. For the grade 3 cohort, female English learner students had a final cumulative passing rate of 77 percent on the English language arts test, compared with 70 percent for male English learner students—a difference of 7 percentage points, up from the initial difference of 6 percentage points (figure C4). For the grade 6 cohort the difference between female and male students grew from 0.3 percentage point to 4 percentage points in grades 8 and 9.

Math

The difference in passing rates in math between English learner students who were eligible for school lunch programs and those who were not was constant over time for the kindergarten and grade 3 cohorts but not for the grade 6 cohort. As with the English language arts test, English learner students who were eligible for school lunch programs

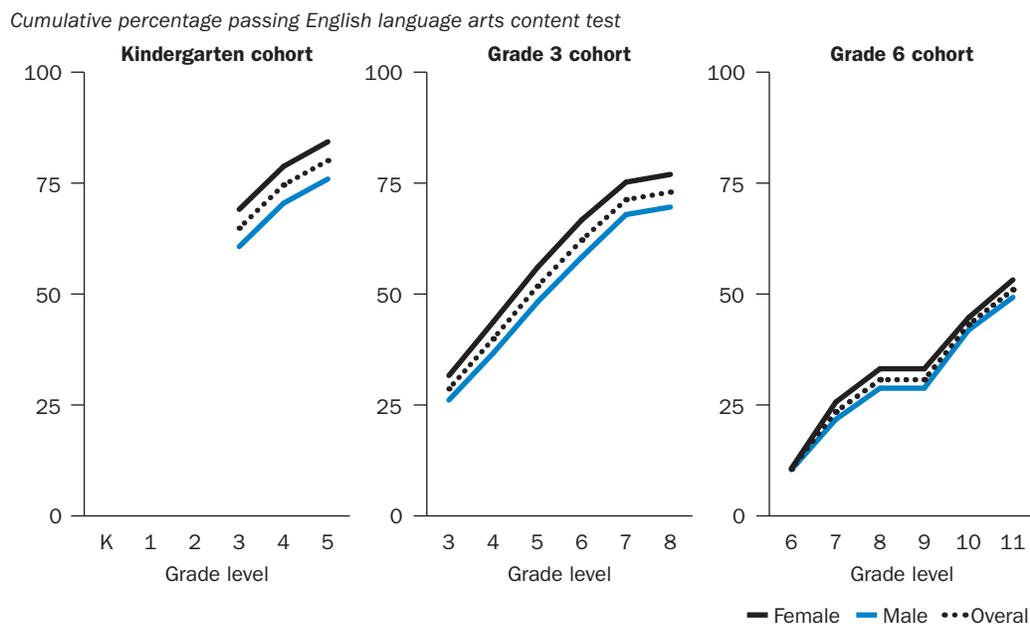
Figure C3. The difference in passing rates on Arizona’s English language arts content test between English learner students who were eligible for school lunch programs and those who were not eligible remained fairly constant over the course of the study, 2006/07–2011/12



Note: The English language proficiency assessment in 2006/07 serves as a baseline, defining the initial population of English learner students for this analysis. Students take content tests in grades 3–8 and in either grade 10 or 11 in high school; there is no test in grade 9, and thus in the grade 6 cohort, there is a flat line between year 3 (grade 8) and year 4 (grade 9). The number of English learner students in each subgroup is as follows. Kindergarten cohort: eligible for school lunch program, 13,683; not eligible, 3,353. Grade 3 cohort: eligible for school lunch program, 7,171; not eligible, 1,245. Grade 6 cohort: eligible for school lunch program, 4,171; not eligible, 710.

Source: Authors’ analysis of student-level data from Arizona State Office of Education, 2006/07–2011/12.

Figure C4. Female English learner students had consistently higher English language arts passing rates than male English learner students, but the differences in passing rates were larger in the kindergarten cohort, 2006/07–2011/12



Note: The English language proficiency assessment in 2006/07 serves as a baseline, defining the initial population of English learner students for this analysis. Students take content tests in grades 3–8 and in either grade 10 or 11 in high school; there is no test in grade 9, and thus in the grade 6 cohort, there is a flat line between year 3 (grade 8) and year 4 (grade 9). The number of English learner students in each subgroup is as follows. Kindergarten cohort: female, 8,586; male, 8,765. Grade 3 cohort: female, 3,857; male, 4,559. Grade 6 cohort: female, 2,126; male, 2,755.

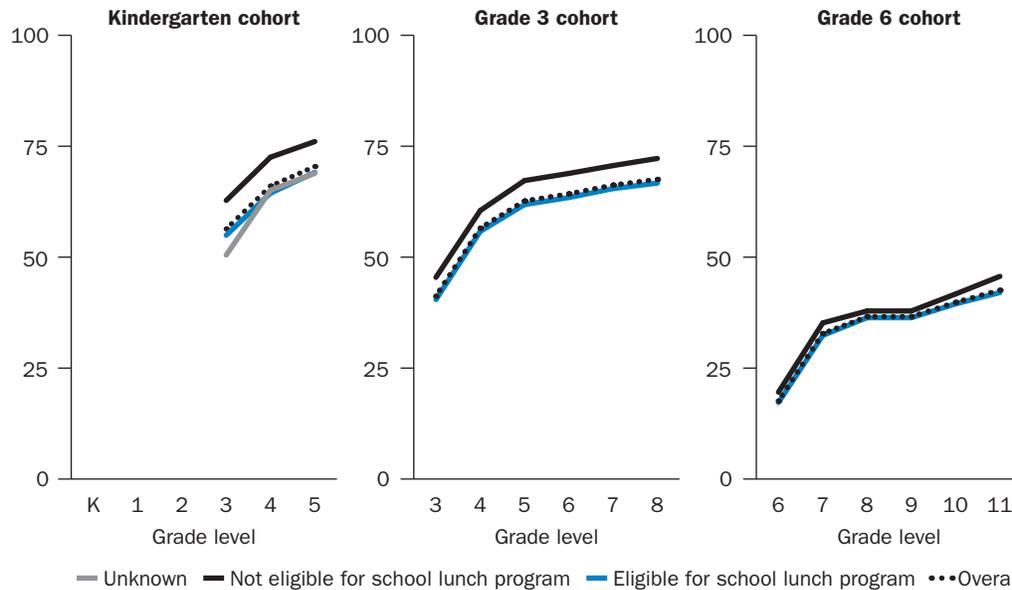
Source: Authors' analysis of student-level data from Arizona State Office of Education, 2006/07–2011/12.

had lower cumulative passing rates on the math test than English learner students who were not eligible (figure C5). In the grade 6 cohort, English learner students who were eligible for school lunch programs had a cumulative passing rate of 42 percent on the math test, compared with 46 percent among English learner students who were not eligible for school lunch programs—a difference of 4 percentage points, up from 2 percentage points at the start of the study.

Throughout the course of the study the cumulative passing rates for female and male English learner students were very close. The difference in the cumulative passing percentage between female and male students on the math test never exceeded 2 percentage points (figure C6). The biggest difference was in the kindergarten cohort's year 6 (grade 5) and grade 3 cohort's year 1 (grade 3). In the grade 3 cohort female English learner students had a cumulative passing rate of 68 percent on the math test, compared with 67 percent for male English learner students.

Figure C5. The difference in passing rates in math was constant over time between English learner students who were eligible for school lunch programs and those who were not eligible for the kindergarten and grade 3 cohorts but not for the grade 6 cohort, 2006/07–2011/12

Cumulative percentage passing math content test

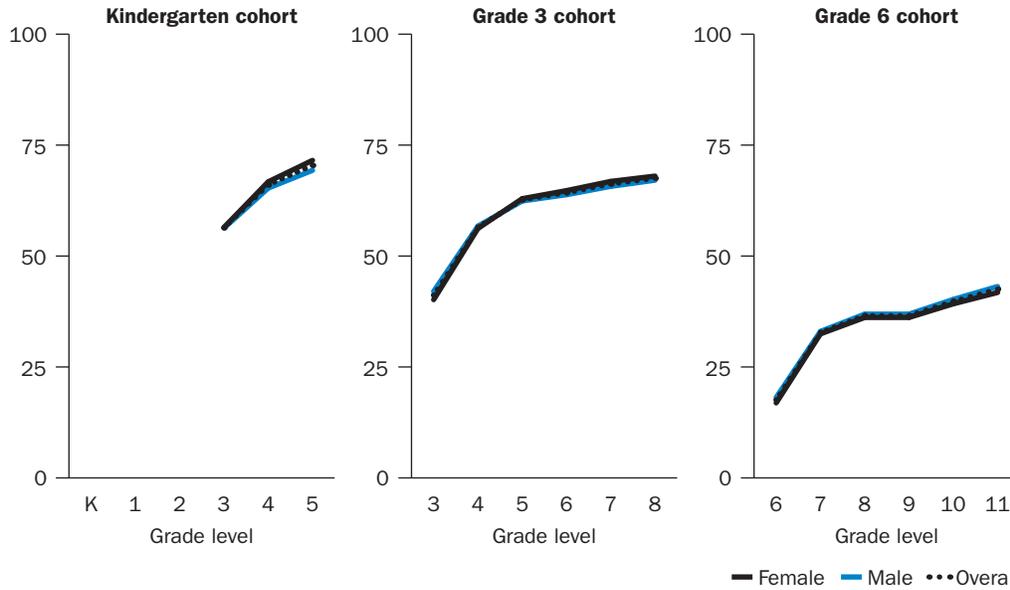


Note: The English language proficiency assessment in 2006/07 serves as a baseline, defining the initial population of English learner students for this analysis. Students take content tests in grades 3–8 and in either grade 10 or 11 in high school; there is no test in grade 9, and thus in the grade 6 cohort, there is a flat line between year 3 (grade 8) and year 4 (grade 9). The number of English learner students in each subgroup is as follows. Kindergarten cohort: eligible for school lunch programs, 22,411; not eligible, 5,970. Grade 3 cohort: eligible for school lunch programs, 11,645; not eligible, 2,083. Grade 6 cohort: eligible for school lunch programs, 7,231; not eligible, 1,244.

Source: Authors' analysis of student-level data from Arizona State Office of Education, 2006/07–2011/12.

Figure C6. Across all three cohorts the cumulative passing rates in math for female and male English learner students were very close over the course of the study, 2006/07–2011/12

Cumulative percentage passing math



Note: The English language proficiency assessment in 2006/07 serves as a baseline, defining the initial population of English learner students for this analysis. Students take content tests in grades 3–8 and in either grade 10 or 11 in high school; there is no test in grade 9, and thus in the grade 6 cohort, there is a flat line between year 3 (grade 8) and year 4 (grade 9). The number of English learner students in each subgroup is as follows. Kindergarten cohort: female, 14,127; male, 14,825. Grade 3 cohort: female, 6,393; male, 7,675. Grade 6 cohort: female, 3,731; male, 4,918.

Source: Authors' analysis of student-level data from Arizona State Office of Education, 2006/07–2011/12.

Note

1. In this study, no statistical tests were performed. Hence, the small differences that were found in this study may not yield a statistically significant difference.

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