

Advanced course enrollment and performance in Washington state: Comparing Spanish-speaking students with other language minority students and English-only speakers



What's Happening

Havala Hanson
Biraj Bisht
Jason Greenberg Motamedi
Education Northwest

Students who take advanced courses in high school are more likely to enroll and persist in college. This report describes patterns in advanced coursetaking among three groups of students in Washington state: Spanish-speaking students, other language minority students whose primary or home language is not Spanish, and English-only speakers. It finds systemic gaps in both course enrollment and performance for Spanish-speaking students, regardless of their English learner status. Other language minority students take more advanced courses than do English-only speakers. When other language minority students become English proficient, they perform in advanced courses as well as or better than English-only speakers do. Accounting for differences in students' prior grade point average and state standardized test scores in math and reading explains most, but not all, of the gaps in advanced course enrollment and performance. The findings can help local and state policymakers improve education outcomes for Spanish-speaking students and may suggest areas for future research.

Why this study?

Rigorous coursework in high school is important for postsecondary success. Research suggests that students who participated in advanced coursework tend to be better prepared for college than peers who did not (Attewell & Domina, 2008; Barnard-Brak, McGaha-Garnett, & Burley, 2011; Long, Conger, & Iatarola, 2012; Roderick & Stoker, 2010). But access to and enrollment in advanced courses (such as honors,

Advanced Placement, International Baccalaureate, and dual-enrollment courses; see box 1 for definitions of key terms used in this report) is often disproportionate across demographic groups. For instance, White, Asian, and socioeconomically advantaged students often outnumber students in other demographic groups in advanced and college preparatory courses (Barnard-Brak et al., 2011; Iatarola, Conger, & Long, 2011).

Language minority students—students whose primary or home language is not English—are often overlooked in research on disparities in advanced course enrollment. These students, whose numbers are growing in many school districts, might be well-positioned to succeed in advanced courses, such as those found in International Baccalaureate programs or in world languages courses (Aldana & Mayer, 2014). Yet unique challenges—such as high mobility rates or the need to learn academic content and English language skills simultaneously—could leave some language minority students underprepared for advanced coursework (Estrada, 2015; Short & Boyson, 2012).

Because language minority students are a highly diverse group, simple comparisons with English-only speakers may have limited value. Language minority students have a wide range of backgrounds that may influence their academic paths. For example, some language minority students are learning English in high school along with their academic content courses, while others have been English proficient for years,

Box 1. Key terms

Advanced courses. Advanced Placement, International Baccalaureate, honors-level, Cambridge Program, and dual-enrollment courses (those in which students receive both high school and college credit), as well as courses that exceed graduation requirements in math, science, and world languages, such as multivariate calculus and inorganic chemistry. A student was considered enrolled in an advanced course if that course was listed on the student’s transcript. However, if a student withdrew from an advanced course before the first grading period, that student was not considered enrolled in the course.

Current English learner students. Students who are classified as English learner students and are eligible to receive English learner services in the current school year.

Former English learner students. Students who have been reclassified as English proficient. Washington state’s only criterion for reclassifying students as English proficient is a score of 4 or higher on the state’s English proficiency exam, which is administered annually to all students who are not English proficient to measure their growth in English language knowledge and skills. During the study period students took either the Washington Language Proficiency Test II (2009/10–2011/12) or the Washington English Language Proficiency Assessment (2012/13).

Language minority students. Students whose primary or home language is not English. The Washington Office of Superintendent of Public Instruction collects data on students’ primary language and students’ home language. Both variables were used to determine language minority student status. This report examines two groups of language minority students:

- **Spanish-speaking students.** Students whose primary or home language is Spanish.
- **Other language minority students.** Students whose primary or home language is not English or Spanish.

Never-English learner students. Students who entered Washington schools English proficient and never qualified for English learner services. This study examined two groups of never-English learner students:

- **Bilingual never-English learner students.** Students who have never been classified as English learner students but whose primary or home language is not English. These students are referred to as “bilingual students” in this report.
 - **English-only never-English learner students.** Students who have never been classified as English learner students and whose only reported primary or home language is English. These students are referred to as “English-only speakers” in this report.
-

perhaps even from their first day of kindergarten. They speak different languages with varying degrees of similarity to English and have different mastery over their primary or home languages. Some experience hardships that arise from being a refugee or having parents who are undocumented immigrants; others are from families that have been U.S. citizens for generations and speak English and a heritage language equally well. Without examining differences among language minority students, local and state education leaders may not have enough information to decide how to equitably prepare students for advanced course-taking and how to ensure that opportunities to enroll in those courses are equitably distributed.

This report helps fill that information gap by clarifying differences in advanced course enrollment and performance for groups of language minority students and English-only speakers in Washington state public high schools. It focuses on students who are current or former English learner students, bilingual never-English learner students (students whose primary or home language is not English but who were never classified as English learner students; hereafter referred to as “bilingual students”), and students who speak only English. Spanish-speaking students are the largest group of language minority students both in Washington state, where three in five language minority students speak Spanish, and nationwide, where nearly three in four language minority students of school age speak Spanish (U.S. Census Bureau, 2014). Spanish-speaking students have historically been underserved in U.S. schools because they are more likely to attend schools with fewer resources, and because, in the schools that they attend, they may have less access to college preparatory curricula than do their English-speaking peers (Callahan & Shifrer, 2016; Hemphill & Vanneman, 2011; Telles & Ortiz, 2009). This underscores the importance of observing how their coursetaking patterns differ from those of other students.

What the study examined

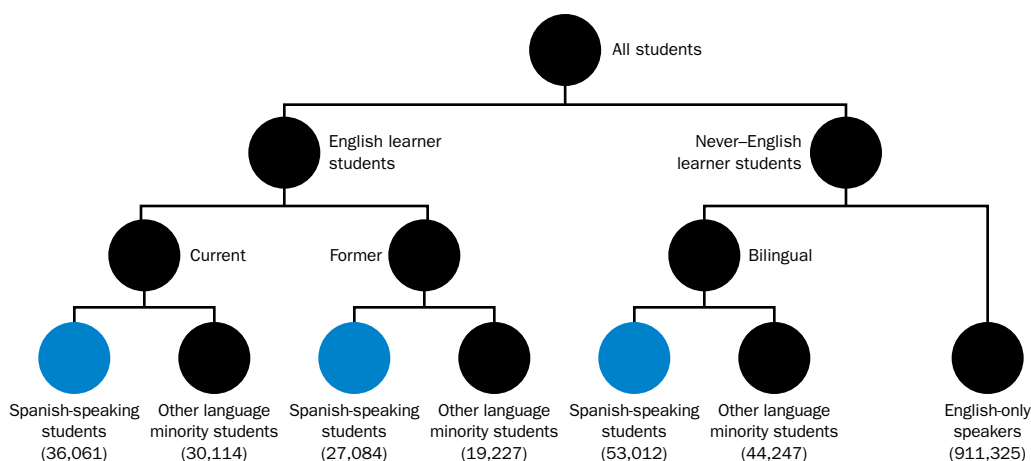
This study examined four research questions:

- How many advanced courses do Spanish-speaking students, other language minority students, and English-only speakers in Washington state take per school year, and how does this vary by English learner student status?
- How much does prior academic performance, as measured by grade point average and state standardized test scores from the previous school year, account for differences in advanced course enrollment across groups?
- How do the grades earned in advanced courses compare among Spanish-speaking students, other language minority students, and English-only speakers, and how do grades vary by English learner student status?
- How does the number of advanced courses offered vary between schools with a high percentage of Spanish-speaking students and schools with a low percentage of Spanish-speaking students?

This report complements the findings of a recent Regional Educational Laboratory Northwest study that showed that current and former English learner students in Washington state took fewer advanced courses and had fewer advanced courses offered at their schools than did students who had never been English learner students (Hanson, Bisht, & Greenberg Motamedi, 2016). Prior academic performance explained many of the differences across groups but did not account for the differences in the number of advanced courses offered across different schools. That study addressed research questions similar to those addressed in this report but compared outcomes only for current and former English learner students relative to never-English learner students; it did not address how advanced coursetaking outcomes differ by students’ primary or home language.¹

The current analysis used demographic, assessment, and course enrollment data from the Washington Office of Superintendent of Public Instruction for more than 1 million students enrolled in Washington state high schools between 2009/10 and 2012/13 (figure 1). Students were categorized into seven groups, by

Figure 1. Student subgroups analyzed in this study, based on English learner student status and language spoken, 2009/10–2012/13



Note: Numbers in parentheses represent the sample size for each category.

Source: Authors' definitions based on Washington Office of Superintendent of Public Instruction data.

both English learner status and home or primary language. Findings are based on calculations of percentages and averages and the results of regression analysis. Additional details about the methodology of this study are given in the appendix.

What the study found

Many differences emerged in advanced course enrollment, performance, and access in Washington state high schools among groups of language minority students and students who speak only English. These are summarized in four key findings.

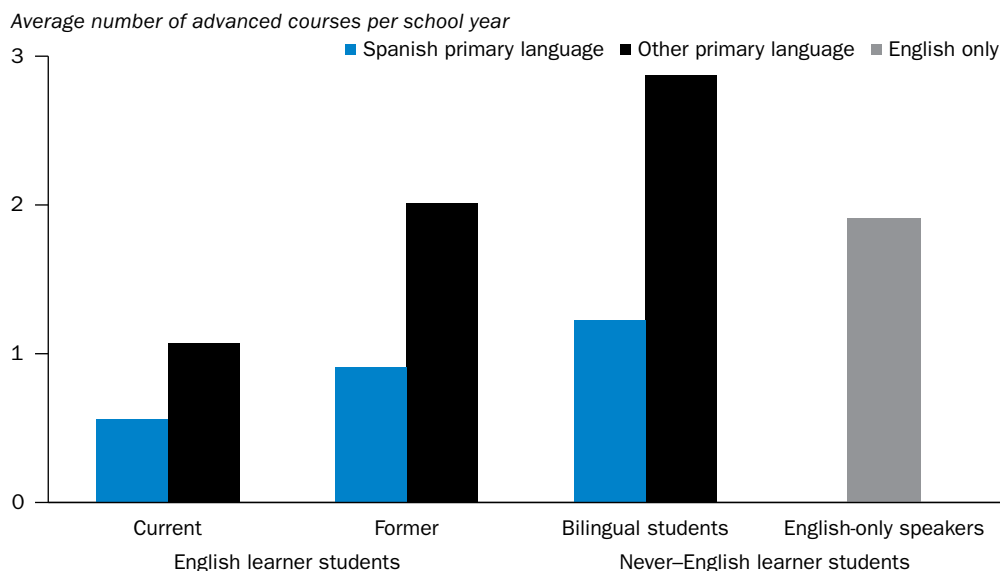
Spanish-speaking students, regardless of their English learner status, take fewer advanced courses than do other language minority students and English-only speakers

On average, Spanish-speaking students enroll in fewer advanced courses than do other language minority students and English-only speakers (figure 2). They also enroll in half as many advanced courses per year as other language minority students with the same English learner status do. In fact, former English learner students whose primary or home language is not Spanish take as many advanced courses per year as English-only speakers do. Moreover, bilingual students whose primary or home language is not Spanish take about one more advanced course per year than English-only speakers do.

Prior academic performance explains much of the difference in advanced course enrollment between Spanish-speaking students and English-only speakers but does not explain most gaps between other language minority students and English-only speakers

In general, students with higher grade point averages and state standardized test scores in math and reading from the previous school year take more advanced courses. However, high-achieving and low-achieving students are not evenly distributed across student groups. On average, bilingual speakers of other languages take more advanced courses than all other groups do and have the highest average grade point average (2.85). When scores are standardized to have a mean of 0 and a standard deviation of 1 within grade level and school year, bilingual speakers of other languages also have the highest state standardized test scores

Figure 2. Spanish-speaking students in Washington state high schools take fewer advanced courses per year than do other language minority students with the same English learner status and English-only speakers, 2009/10–2012/13



Note: Current English learner students are classified as English learner students and are eligible to receive English learner services in the current school year. Former English learner students are students who were previously classified as English learner students but were reclassified as English proficient. Bilingual never-English learner students are students who have never been classified as English learner students but whose primary or home language is not English. English-only never-English learner students are students who have never been classified as English learner students and whose only reported primary or home language is English. Values are unadjusted and do not account for differences across schools or in students' prior academic performance, such as grade point average and state standardized test scores in math and reading.

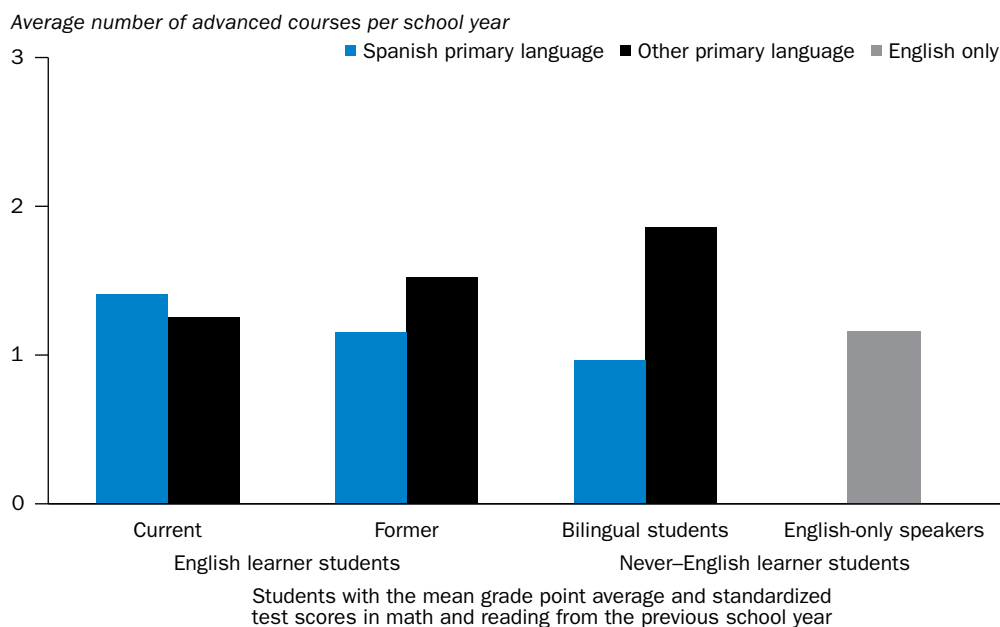
Source: Authors' analysis based on Washington Office of Superintendent of Public Instruction data for 2009/10–2012/13.

in math (0.47) and reading (0.34) from the previous school year. Spanish-speaking current English learner students take the fewest advanced courses and have the lowest average grade point average (1.88) and state standardized test scores in math (−0.83) and reading (−0.98) from the previous school year.

However, there are low-achieving and high-achieving students in every group. When students who have the same grade point average and state standardized test scores in math and reading from the previous school year are compared, Spanish-speaking students take about as many or more advanced courses per year as English-only speakers do (figure 3). Differences also decrease or disappear between Spanish-speaking students and other language minority students when students have equivalent prior academic performance. The fact that Spanish-speaking students take fewer advanced courses on average when measures of prior academic performance are not taken into consideration reflects their unequal academic preparation (below-average grade point averages and state standardized test scores).

Prior academic performance did not explain much of the gap between bilingual speakers of other languages and English-only speakers, and taking prior academic achievement into account widened the gap between former English learner speakers of other languages and English-only speakers. Compared with English-only speakers who have the same grade point average and state standardized test scores in math and reading from the previous school year, bilingual speakers of other languages still take 0.7 more advanced course per school year, on average. Prior academic performance accounted for just 27 percent of the difference in the number of advanced courses taken by English-only speakers and bilingual speakers of other languages. For comparison, prior academic performance explained 71 percent of the difference between bilingual Spanish-speaking students and English-only speakers.

Figure 3. Language minority students in Washington state high schools take about as many or more advanced courses per year as English-only speakers do when they have the same grade point average and state standardized test scores in math and reading from the previous school year, 2009/10–2012/13



Note: Current English learner students are classified as English learner students and are eligible to receive English learner services in the current school year. Former English learner students are students who were previously classified as English learner students but were reclassified as English proficient. Bilingual never-English learner students are students who have never been classified as English learner students but whose primary or home language is not English. English-only never-English learner students are students who have never been classified as English learner students and whose only reported primary or home language is English. The number of advanced courses taken per year is calculated based on coefficients from a regression model that is described in the appendix. The sample mean grade point average from the previous school year is 2.57, the sample mean standardized test score in math from the previous school year is 0.17, and the sample mean standardized test score in reading from the previous school year is 0.15.

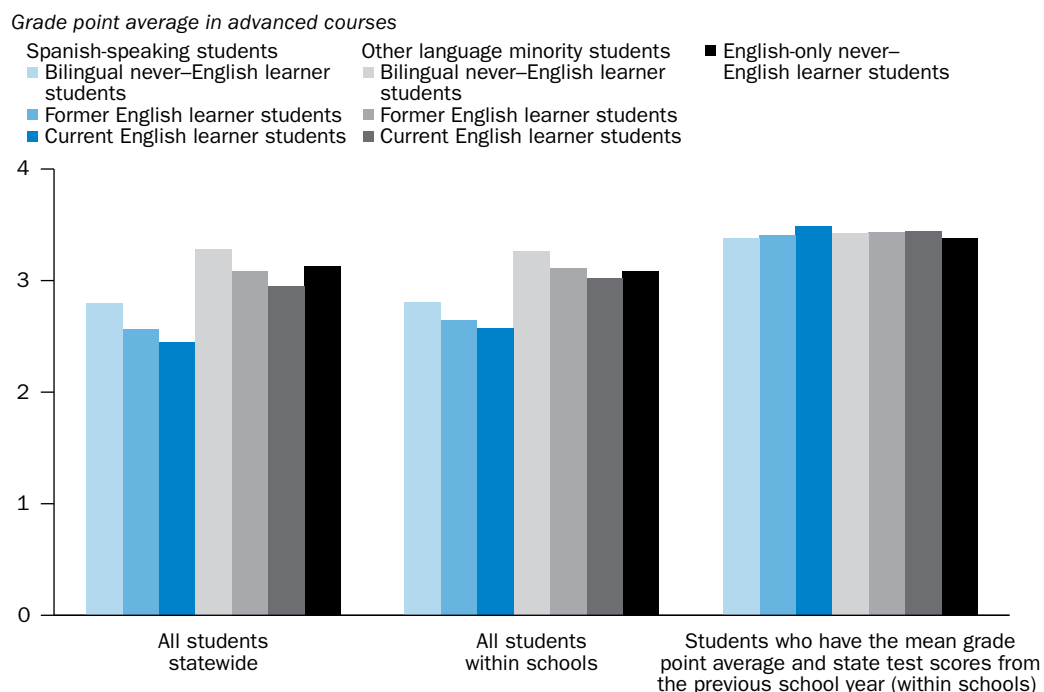
Source: Authors' analysis based on Washington Office of Superintendent of Public Instruction data for 2009/10–2012/13.

Spanish-speaking students earn lower grades in advanced courses than do non-Spanish-speaking students, but the differences disappear when students have the same grade point average and state standardized test scores in math and reading from the previous year and attend the same school

Statewide, Spanish-speaking students on average earn lower grades in advanced courses than do other language minority students and English-only speakers (figure 4). One possible explanation is that grading policies vary across schools; some schools experience grade inflation and others experience grade deflation (Zhang & Sanchez, 2013). Nevertheless, when students who attend the same school are compared, differences in the grade point average earned in advanced courses among groups of language minority students and English-only speakers remain nearly as large (as shown in a comparison of the first and second sets of bars in figure 4).

The factor that best explains the difference in advanced course grade point average is prior academic performance. Among students who attend the same school and have the same grade point average and state standardized test scores in math and reading in the previous school year, Spanish-speaking students earn virtually the same grades in advanced courses as English-only speakers and other language minority students do, regardless of English learner student status (as shown in the third set of bars in figure 4). Though not shown, either measure of prior academic performance (grade point average or state standardized test scores) can fully account for the differences alone, both within and across schools.

Figure 4. Spanish-speaking students in Washington state high schools earn lower grades in advanced courses than other language minority students and English-only speakers do until grade point average and state standardized test scores in math and reading from the previous year are taken into account, 2009/10–2012/13



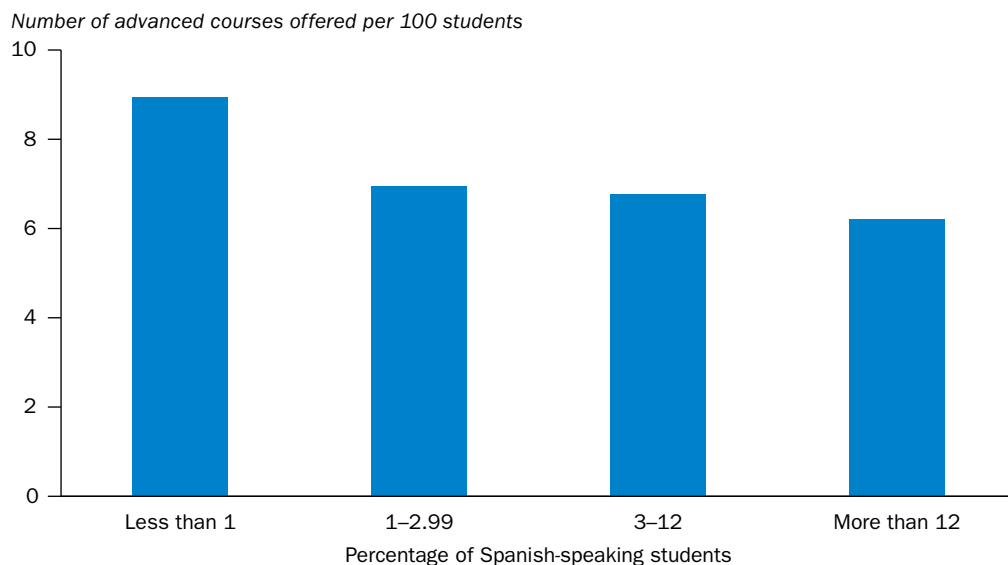
Note: Current English learner students are classified as English learner students and are eligible to receive English learner services in the current school year. Former English learner students are students who were previously classified as English learner students but were reclassified as English proficient. Bilingual never-English learner students are students who have never been classified as English learner students but whose primary or home language is not English. English-only never-English learner students are students who have never been classified as English learner students and whose only reported primary or home language is English. The sample is restricted to Washington high school students from 2010/11 to 2012/13 who have a grade point average from the previous school year, have Washington state standardized test scores in math and reading from a previous school year in high school or grade 8, and who took at least one advanced course. These results are based on three regression models that are described in the appendix. The sample mean grade point average from the previous school year is 3.02, the sample mean standardized test score in math from the previous school year is 0.54, and the sample mean standardized test score in reading from the previous school year is 0.47.

Source: Authors' analysis based on Washington Office of Superintendent of Public Instruction data for 2009/10–2012/13.

Schools with the lowest percentages of Spanish-speaking students offer more advanced courses than do schools with higher percentages of such students

When Washington state high schools are divided into quartiles based on the percentage of Spanish-speaking students, schools in the first quartile (which had less than 1 percent of such students) offer two or more additional advanced courses per 100 students—a measure that takes school size into account—than schools with higher percentages of such students (figure 5). This result holds after some of the characteristics that make schools with large Spanish-speaking populations different from schools with small Spanish-speaking populations are taken into account. For example, schools with large Spanish-speaking populations are more likely to be located in cities and to have higher student poverty rates, higher student-teacher ratios, and lower average student test scores. In addition, the negative relationship between the share of Spanish-speaking students and the number of advanced courses offered in a school persists even after racial/ethnic composition, including the percentage of students who identify as Hispanic, is taken into account.

Figure 5. Washington state high schools with a high percentage of Spanish-speaking students offer fewer advanced courses per 100 students than schools with a low percentage of such students, 2009/10–2012/13



Note: The difference in the number of advanced courses offered per 100 students in schools is based on an analysis that first divides schools into quartiles based on the percentage of Spanish-speaking students in the school. The number of advanced courses offered per 100 students in a school is estimated using a regression model that is described in the appendix.

Source: Authors' analysis based on Washington Office of Superintendent of Public Instruction data for 2009/10–2012/13.

Implications of the study findings

Washington and other states have set a high priority on improving the achievement and educational attainment of all students, regardless of their background. One way of doing so is to ensure that all students have equal opportunity to prepare for postsecondary success. This study suggests that not all students have those opportunities.

A key finding of this study is that Spanish-speaking students attend schools that offer fewer advanced courses than other schools do, even after average student characteristics within schools are taken into account, including students' state standardized test scores in math and reading. To better understand why Spanish-speaking students in Washington state appear to have fewer opportunities to take advanced courses, future research could work to identify the barriers to offering advanced courses. Future investigations could also assess whether other school characteristics, such as the qualifications of teachers or counselor–student ratios, can explain some of the differences in the number of advanced courses schools offer. In the meantime, school districts may want to identify gaps and monitor progress toward the goal of equitable advanced course offerings for all students. This study suggests that one way of doing so is to compare advanced course offerings with the schools' percentages of current and former English learner students and number of students who speak each language (as measures of the heterogeneity of the English learner population), in addition to measures such as racial/ethnic composition and poverty rates.

Another key finding is that Spanish-speaking students tend to take fewer advanced courses and earn lower grades in them than do students who speak other languages, including English-only speakers. However, prior grade point average and state standardized test scores in math and reading can explain most of the differences between Spanish-speaking students and English-only speakers. Prior academic performance also

accounts for some of the differences between other language minority students and their peers who speak English only or Spanish. This suggests that advanced course enrollment rates could improve, especially for Spanish-speaking students, if efforts to accelerate their content mastery are successful. Accordingly, education stakeholders may want to review curriculum, instructional and assessment practices, and educators' professional development to identify areas for improving Spanish-speaking students' academic preparation for advanced coursework.

Prior grade point average and state standardized test scores cannot fully explain why Spanish-speaking former English learner students and bilingual students take fewer advanced courses than do former English learner students and bilingual students who speak other languages. More research is needed to identify factors that could contribute to differences in advanced course enrollment beyond prior academic achievement. These factors could include the disproportionate number of Spanish-speaking students living in communities that have higher poverty rates and lower educational attainment rates. Variation in student mobility rates, socioemotional well-being, country of origin, and immigrant generation may also be related to differences in coursetaking and other academic and education outcomes for Spanish-speaking students and other language minority students (see, for example, Suárez-Orozco, Suárez-Orozco, & Todorova, 2008). Similarly, investigating why other language minority students take more advanced courses than do English-only speakers after prior academic performance is taken into account could yield insights into potential strategies for increasing advanced coursetaking for all students (Kolker, 2011).

The findings reinforce the understanding that language minority students are not a homogeneous group. This suggests that schools may benefit from monitoring the academic progress of students who speak different primary or home languages to identify groups that struggle more than others. Understanding the challenges particular students (such as Spanish-speaking students) face could help inform decisions about where to invest efforts to improve student achievement.

Limitations of the study

This study has three main limitations.

First, some former English learner students may be coded as never-English learner students if they were reclassified before 2004/05, the earliest year in the dataset. However, students who have been proficient in English for many years are more likely to be similar to never-English learner students than to current or monitored English learner students in their level of English proficiency.

Second, each high school in Washington state has its own set of requirements for entry into advanced courses, which is not reported to the Washington Office of Superintendent of Public Instruction. Thus, even though a school may offer a course, not all students may qualify to take it.

Third, many factors that are not included in the data contribute to taking advanced courses, including student plans and motivations, academic rigor in the primary grades, family support, and school policies, such as academic tracking or English proficiency requirements for mainstream and advanced courses. Further research is needed to determine the root causes of differences in academic performance and advanced coursetaking between English learner students and never-English learner students.

Appendix. Data and methods

This appendix provides details on the data and methods used in this study, including the regression models.

Data

The Washington Office of Superintendent of Public Instruction provided data on students who were enrolled in Washington state public high schools between 2009/10 and 2012/13. The data included students' school and district enrollment, withdrawal date and reason, gender, race/ethnicity, grade level, English learner status, special education status, home and primary language, standardized test scores in math and reading, and course transcripts.

U.S. Census data were incorporated into the data from the Washington Office of Superintendent of Public Instruction in order to determine “neighborhood” socioeconomic indicators, such as the percentage of people living under the poverty line in a student's zip code. Finally, schools were matched to the National Center for Education Statistics Elementary and Secondary Information System (U.S. Department of Education, n.d.) to obtain locale codes (city, suburban, town, or rural²), the percentage of students in the school who qualified for the federal school lunch program, and the number of full-time equivalent educators.

Methods

The report provides descriptive statistics about patterns in advanced course enrollment and performance among current and former English learner students, bilingual students, and never-English learner students. Results are presented separately for Spanish-speaking students and students who spoke other languages at home. Research question 1 was addressed by calculating the average number of advanced courses taken per year for students in each language and English learner group. Research questions 2–4 were addressed using regression analysis. The first regression model estimates the difference in advanced course enrollment among students from different language and English learner student groups based on their prior grade point average and standardized test scores:

$$\begin{aligned} \text{Advanced courses taken}_i = & \beta_0 + \beta_{1-7} \text{EL Language Group}_i + \beta_{8-11} \text{School Year}_i + \beta_{12-15} \text{Grade Level}_i + \\ & \beta_{16-31} (\text{Grade X Year})_i + \beta_{32} \text{Previous Year GPA}_i + \beta_{33} \text{Previous Year Math Test Score}_i + \\ & \beta_{34} \text{Previous Year Reading Test Score}_i + \varepsilon_i \end{aligned} \quad (\text{A1})$$

where *Advanced courses taken* is the number of advanced courses that student *i* in school *j* took by the end of high school; *EL Language Group* is a set of binary variables that indicate the language and English learner group a student *i* belongs to (either Spanish-speaking current English learner student, other language current English learner student, Spanish-speaking former English learner student, other language former English learner student, Spanish-speaking bilingual student, other language bilingual student, or English-only student—English-only student is the referent category); *School Year* represents a set of binary variables for each school year between 2010/11 and 2012/13 (2009/10 is the referent category); *Grade Level* is a set of binary variables for each grade level between grade 10 and grade 12 (grade 9 is the referent category); *Grade X Year* represents interaction terms for student *i*'s grade level multiplied by the school year; *Previous Year GPA* is student *i*'s grade point average in the previous school year; *Previous Year Math Test Score* is student *i*'s standardized test score in math from the previous school year, standardized with a mean of 0 and a standard deviation of 1 within test, grade level, and school year; *Previous Year Reading Test Score* is student *i*'s standardized test score in reading from the previous school year, standardized with a mean of 0 and a standard deviation of 1 within test, grade level, and school year; and ε is an error term.

The second regression analysis estimates the difference in advanced course grade point average among students from different language and English learner student groups. The regression models enable comparisons within and across schools and allow for prior achievement to be taken into account:

$$GPA \text{ in advanced courses}_i = \beta_0 + \beta_{1-7}EL \text{ Language Group}_i + \beta_{8-11}School \text{ Year}_i + \beta_{12-15}Grade \text{ Level}_i + \beta_{16-31}(Grade \text{ X Year})_i + \varepsilon_i \quad (A2)$$

$$GPA \text{ in advanced courses}_i = \beta_0 + \beta_{1-7}EL \text{ Language Group}_i + \beta_{8-11}School \text{ Year}_i + \beta_{12-15}Grade \text{ Level}_i + \beta_{16-31}(Grade \text{ X Year})_i + \sum_{j=1}^{1902} \beta_{32-1933}School_j + \varepsilon_i \quad (A3)$$

$$GPA \text{ in advanced courses}_i = \beta_0 + \beta_{1-7}EL \text{ Language Group}_i + \beta_{8-11}School \text{ Year}_i + \beta_{12-15}Grade \text{ Level}_i + \beta_{16-31}(Grade \text{ X Year})_i + \beta_{32}Previous \text{ Year GPA}_i + \beta_{33}Previous \text{ Year Reading Test Score}_i + \beta_{34}Previous \text{ Year Math Test Score}_i + \sum_{j=1}^{1902} \beta_{35-1936}School_j + \varepsilon_i \quad (A4)$$

where *GPA in advanced courses* is the average grade point average earned in all advanced courses taken by student *i* in school *j*; *School* is a set of fixed effects for each school *j* in the state; *Previous Year Reading Test Score* is student *i*'s standardized test score in reading from the previous school year, standardized with a mean of 0 and a standard deviation of 1 within test, grade level, and school year; and *Previous Year Math Test Score* is student *i*'s standardized test score in math from the previous school year, standardized with a mean of 0 and a standard deviation of 1 within test, grade level, and school year.

The final regression analysis estimated the difference in the number of advanced courses offered in schools that serve varying proportions of Spanish-speaking students. First, schools were grouped into quartiles on the basis of the percentage of students attending the school who spoke Spanish as a home or primary language.

Second, the number of advanced courses offered per 100 students was calculated. For example, a school with 1,000 students that offers 80 advanced courses would have 8 courses per 100 students. This measure takes school size into account when comparing schools. Third, a school district fixed-effect model was used to estimate the number of advanced courses offered across schools of varying English learner student compositions, where the dependent variable is the number of advanced courses offered per 100 students, and independent variables include the indicators for each of the four groups of schools and school characteristics, such as the percentage of students attending the school who qualify for the federal school lunch program:

$$Advanced \text{ courses per 100 students}_j = \beta_0 + \beta_{1-4}Spanish \text{ Percent Quartile}_j + \beta_5Average \text{ Math Test Scores}_j + \beta_6Average \text{ Reading Test Scores}_j + \beta_7Percent \text{ Special Education}_j + \beta_8Percent \text{ FSLP}_j + \beta_9Locale_j + \beta_{10}Enrollment \text{ Size}_j + \beta_{11}Student \text{ Teacher Ratio}_j + \beta_{12-18}Percent \text{ Race Ethnicity}_j + \sum_{k=1}^{894} \beta_{19-912}District_k + \varepsilon_j \quad (A5)$$

where *Advanced courses per 100 students* is the number of advanced courses offered in school *j* in district *k*; *Spanish Percent Quartile* is a set of indicators for each quartile in which schools are divided evenly into quartiles based on the percentage of students in school *j* who were Spanish speakers (the quartile with the lowest percentage is the referent category); *Average Math Test Scores* is the mean standardized test score in math in school *j*, standardized to have a mean of 0 and a standard deviation of 1 within grade level and school year; *Average Reading Test Scores* is the mean state standardized reading test score in school *j*, standardized to have a mean of 0 and a standard deviation of 1 within grade level and school year; *Percent Special Education* is the percentage of students who qualified for special education services in school *j*; *Percent FSLP* is the percentage of students qualifying for the federal school lunch program in school *j*;

Locale represents the National Center for Education Statistics locale code of school j (suburban, distant/fringe, and remote schools relative to city schools); *Percent Race Ethnicity* is a set of indicators for the percentage of students of each racial/ethnic category in school j (in other words, the percentage of students who were Asian, Black, Hispanic, American Indian, Native Hawaiian or Pacific Islander, and two or more races/ethnicities, relative to the percentage of students who were White); and *District* is a set of fixed effects for each district in the state. In equation A5, analysis is conducted at the school level, and standard errors are clustered at the district level to control for unobserved differences between districts.

Notes

1. However, that study also found that students who pass algebra I in middle school take more than twice as many upper level math courses as students who pass algebra I in grade 9, regardless of English learner student status.
2. Distant and fringe town and distant and fringe rural schools were grouped into one category, and remote town and remote rural schools were grouped into another category after the study team noticed similarities in characteristics and results for schools in those groups.

References

- Aldana, U., & Mayer, A. (2014). International Baccalaureate: A college preparatory pathway for heritage language speakers and immigrant youth. In R. M. Callahan & P. C. Gándara (Eds.), *The bilingual advantage: Language, literacy and the US labor market* (pp. 261–285). Buffalo, NY: Multilingual Matters.
- Attewell, P., & Domina, T. (2008). Raising the bar: Curricular intensity and academic performance. *Educational Evaluation and Policy Analysis*, 30(1), 51–71. <http://eric.ed.gov/?id=EJ786477>
- Barnard-Brak, L., McGaha-Garnett, V., & Burley, H. (2011). Advanced placement course enrollment and school-level characteristics. *NASSP Bulletin*, 95(3), 165–174. <http://eric.ed.gov/?id=EJ947202>
- Callahan, R. M., & Shifrer, D. (2016). Equitable access for secondary English learner students: Course taking as evidence of EL program effectiveness. *Educational Administration Quarterly*, 52(3), 463–496. <http://eric.ed.gov/?q=EJ1104637>
- Estrada, P. (2015, April). The consequences for access to core content, the full curriculum, and higher-performing non-EL peers of continuing EL status in secondary school. Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL.
- Hanson, H., Bisht, B., & Greenberg Motamedi, J. (2016). *Advanced course enrollment and performance among English learner students in Washington State* (REL 2017–187). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Northwest. <http://ies.ed.gov/ncee/edlabs/projects/project.asp?projectID=432>.
- Hemphill, F. C., & Vanneman, A. (2011). Achievement gaps: How Hispanic and White students in public schools perform in mathematics and reading on the National Assessment of Educational Progress (NCES No. 2011–459). Washington, DC: U.S. Department of Education, National Center for Education Statistics. <http://eric.ed.gov/?id=ED520960>
- Iatarola, P., Conger, D., & Long, M. C. (2011). Determinants of high schools' advanced course offerings. *Educational Evaluation and Policy Analysis*, 33(3), 340–359. <http://eric.ed.gov/?id=EJ935251>
- Kolker, C. (2011). *The immigrant advantage: What we can learn from newcomers to America about health, happiness and hope*. New York, NY: Free Press.
- Long, M. C., Conger, D., & Iatarola, P. (2012). Effects of high school course-taking on secondary and postsecondary success. *American Educational Research Journal*, 49(2), 285–322. <http://eric.ed.gov/?id=EJ960491>
- Roderick, M., & Stoker, G. (2010). Bringing rigor to the study of rigor: Are Advanced Placement courses a useful approach to increasing college access and success for urban and minority youths? In J. L. Meece & J. S. Eccles (Eds.), *Handbook of research on schools, schooling, and human development* (pp. 216–234). New York, NY: Routledge.
- Short, D. J., & Boyson, B. A. (2012). *Helping newcomer students succeed in secondary schools and beyond*. Washington, DC: Center for Applied Linguistics. Retrieved September 24, 2015, from <http://www.cal.org/resource-center/publications/helping-newcomer-students>.

- Suárez-Orozco, C., Suárez-Orozco, M. M., and Todorova, I. (2008). *Learning in a new land: Immigrant students in American society*. Cambridge, MA: Harvard University Press.
- Telles, E. E., & Ortiz, V. (2009). *Generations of exclusion: Mexican Americans, assimilation, and race*. New York, NY: Russell Sage Foundation.
- U.S. Census Bureau. (2014). American Community Survey 5-Year Estimates, 2010–2014. Table: Language Spoken at Home. Retrieved September 6, 2016, from http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_14_5YR_S1601&prodType=table.
- U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. (n.d.). Common Core of Data. Local Education Agency Universe Survey, 2002–03. Retrieved April 9, 2015, from <https://nces.ed.gov/ccd/elsi/tableGenerator.aspx>.
- Zhang, Q., & Sanchez, E. I. (2013). *High school grade inflation from 2004 to 2011* (ACT Research Report Series No. 3). Iowa City, IA: ACT. <http://eric.ed.gov/?id=ED555577>

REL 2017–220

The National Center for Education Evaluation and Regional Assistance (NCEE) conducts unbiased large-scale evaluations of education programs and practices supported by federal funds; provides research-based technical assistance to educators and policymakers; and supports the synthesis and the widespread dissemination of the results of research and evaluation throughout the United States.

January 2017

This report was prepared for the Institute of Education Sciences (IES) under Contract ED-IES-12-C-0003 by Regional Educational Laboratory Northwest administered by Education Northwest. The content of the publication does not necessarily reflect the views or policies of IES or the U.S. Department of Education, nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government.

This REL report is in the public domain. While permission to reprint this publication is not necessary, it should be cited as:

Hanson, H., Bisht, B., & Greenberg Motamedi, J. (2017). *Advanced course enrollment and performance in Washington state: Comparing Spanish-speaking students with other language minority students and English-only speakers* (REL 2017–220). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Northwest. Retrieved from <http://ies.ed.gov/ncee/edlabs>.

This report is available on the Regional Educational Laboratory website at <http://ies.ed.gov/ncee/edlabs>.

The Regional Educational Laboratory Program produces 7 types of reports

	Making Connections Studies of correlational relationships
	Making an Impact Studies of cause and effect
	What's Happening Descriptions of policies, programs, implementation status, or data trends
	What's Known Summaries of previous research
	Stated Briefly Summaries of research findings for specific audiences
	Applied Research Methods Research methods for educational settings
	Tools Help for planning, gathering, analyzing, or reporting data or research