

Study of Dual-Language Immersion in the Portland Public Schools Year 4 Briefing: November 2015

The Study of Dual-Language Immersion in the Portland Public Schools is a four-year study undertaken by RAND, the American Councils for International Education, and the Portland Public Schools with funding by the U.S. Department of Education's Institute for Education Sciences (grant #R305E120003). Launched in July 2012 and now in its final year, the study examines the effects of dual-language immersion (DLI) on student achievement. The study's goals are to 1) estimate the causal impact of immersion education on student achievement in mathematics, English language arts, and science, 2) examine how this effect differs for native English speakers versus native speakers of other languages, 3) illuminate the variation in instructional practices among immersion programs and between immersion and non-immersion classes in DLI schools, and 4) document the costs of immersion instruction in the district.

Portland Public Schools provides an excellent test bed for studying dual-language education at scale, in part because it allocates its popular immersion slots using a random-assignment lottery process. Moreover, about 10% of the district's students are enrolled in immersion, and about a quarter of its schools offer immersion programs. The 46,000-student district, which is among the two largest in the Pacific Northwest, has offered immersion since 1986, and currently offers DLI programs in Spanish, Japanese, Mandarin Chinese, Russian, and Vietnamese. These include *two-way programs*, in which about half of students are native speakers of English and half are native speakers of the "partner" (non-English) language, as well as *one-way programs*, in which most students in the classroom are new to the partner language. All partner languages except Vietnamese (which is the district's newest immersion language) are included in the study.

Data-Collection Activities during the Study (2012-2015)

- The study includes 27,741 students who enrolled in kindergarten in Portland Public Schools in 2004-05 through 2010-11. These students' academic performance on the Oregon Assessment of Knowledge and Skills (OAKS) was tracked in reading, mathematics, and science through 2013-14, meaning that the youngest cohort was tracked through grade 3, and the oldest two cohorts through grade 8.
- Within the sample, our main focus was on 1,625 students who were randomized to immersion or a control group via Portland's immersion pre-K and kindergarten immersion lotteries in 2004-05 through 2010-11.
- Through collaboration with the Oregon Department of Education, we were able to include 200 randomized students (about 10.3%) who never enrolled in Portland after entering a pre-K or kindergarten immersion lottery. This left us with similarly modest levels of sample attrition for students who won the lottery (13%) versus those who did not (19.3%).
- We also wanted to understand what instruction looked like in immersion programs. In Year 1 (2012-13) we observed 79 fifty-minute lessons across all languages (58% immersion and 42% English) to document teaching practices in immersion and non-immersion classrooms. In Year 2 (2013-14), we observed 119 forty-five-minute lessons (31 teachers) in grades 1 through 7 in the four partner languages, documenting language use and use of instructional time.

Key Findings from the Study

Student Performance

- Students randomly assigned to immersion outperformed their peers in English reading by about 7 months in grade 5, and about 9 months in grade 8.

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- We find no statistically significant benefit, but also no detriment, for math and science performance.
- We find suggestive but not statistically significant evidence that the immersion benefit in reading is higher for students in Spanish immersion programs, and that math benefits are higher for students in the less-commonly-taught languages (Japanese, Mandarin, and Russian).
- We find no clear differences in immersion effects by native language. Reading effects for students whose native language matches the classroom partner language appear as high as or higher than for Native English speakers.
- English Language Learners (ELLs) randomized to immersion programs have a 3 point higher rate of becoming English proficient by sixth grade, and this effect is larger (14 points) if students' native language matches the classroom partner language.
- On average, immersion students reach intermediate levels of partner-language proficiency by grade 8, with somewhat higher performance in Spanish and Chinese (intermediate mid-to-high) than in Japanese (intermediate low-to-mid).

Costs and Mediators

- We find no evidence that observable peer, teacher, and class size characteristics are driving the effects of immersion on achievement. Class sizes appear similar for immersion lottery winners and those who did not win immersion slots.
- Based on interviews in 2013-14 with 14 of 19 immersion school principals, we find that school-level resources for DLI and non-DLI programs are proportional to immersion enrollments.
- DLI operating costs are concentrated at the district level. In 2013-14, they represented about 0.1% of the district's operating budget (excluding grant dollars), though this represented a considerable increase in DLI costs from prior years. These expenditures, which were applied toward teacher professional development and curriculum support, amounted to \$137 per immersion student in 2013-14 (n=4,108).
- If expenditures had been this high since 2004-05, then each \$10 spent per immersion pupil across grades K-8 would have yielded an additional day of English reading skills in grade 5, *and* an additional 1.3 days in grade 8. This likely overstates the actual cost of the effects per day for the lottery cohorts in the sample.

Instructional Practice

- In our observations of 119 lessons in 2014, immersion teachers were consistent in their use of the partner language. Specifically, 52% remained in the partner language 100% of the time, and 46% remained in the partner language at least 90% of the time.
- Among students who spoke in class, 22% always did so in the partner language, and 60% did so 90-99% of the time.
- Students used the partner language more consistently with teachers than with peers.
- Students' opportunities for speech and writing production varied among classes.

Contributions of the Study

- This study is the first randomized study of immersion that we are aware of to be conducted on a district-wide scale (with 12 schools, rather than a single school, in the impact analysis) and to track students through middle school.
- It is also able to examine immersion's effects on both native English speakers and native speakers of other languages, whereas most U.S. studies of DLI have focused solely on ELLs.
- Immersion programs as implemented in Portland appear to be a cost-effective strategy for raising English reading performance of both native English speakers and native speakers of other languages.
- One caveat is that Portland's results may depend on the levels of instructional consistency and quality that the district has been able to cultivate over time. Maintenance of quality should be a central consideration in efforts to scale or replicate such programs.