

The impact of bilingual education on average school performance: an evaluation of Madrid's bilingual schools programme

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Abstract

This paper analyses the impact of studying in a bilingual education system (Spanish/English) on students' average school performance by examining the effect of the bilingual schools' programme implemented by the regional government of Madrid. It finds that switching to bilingual education had no significant detrimental effect on students' average performance in the courses that continued to be taught in Spanish in the bilingual programme, but there is suggestive evidence that learning English might come at the cost of some technical knowledge and skills in courses that begin being taught in English.

INTRODUCTION

This policy brief presents the results of a study on the impact of studying in a bilingual education system (Spanish/English in this case) on students' average school performance. This is done by analysing the effect of the bilingual schools programme implemented by the regional government of Madrid. Theoretical arguments and empirical studies have been ambiguous as to whether studying in a second language from an early age has a positive impact on overall educational attainment. Some have argued that since we observe that bilingual children can perform better than monolingual children in verbal as well as non-verbal behaviour, this shows that early bilingualism may affect the structure of the intellect. According to this view, children's experiences with two language systems seem to give them "greater mental flexibility, better concept formation, and a more diversified set of mental abilities" (Freudenstein, 1996, p. 46). Others have made the case against bilingual education, arguing that monolingual children perform better than their bilingual peers. Several empirical studies show that students who follow monolingual "structured immersion" programmes start performing worse than their monolingual counterparts, once their education becomes bilingual (Baker and Rossell, 1996).

It is important to bear in mind that children who study in English from an early age do not study fewer subjects than children who study only in Spanish. Given that the time spent in the classroom per day is limited, studying in English as well as in Spanish could pose an additional academic burden that could be reflected in bilingual children performing academically worse than monolingual children in subjects different to English. The time devoted to learning English at school could have a negative externality on the performance in the rest of the subjects, given the time constraints students face. This study sheds some light on this discussion by analysing the programme of bilingual public schools that started in the region of Madrid in 2004, by which 365 public schools have become bilingual to the present day, which represent 44 per cent of all public schools in the Community of Madrid. The results confirm the idea that switching to bilingual education had no significant detrimental effect on students' average performance in Spanish and Mathematics (the courses that continued to be taught in Spanish in the bilingual programme). However, there is suggestive evidence that bilingual students may start performing worse than their monolingual peers in the course that they start learning in English instead of Spanish (the General Knowledge course).

DATA DESCRIPTION AND ANALYSIS STRATEGY

Data

The data used in this paper is taken from the Comunidad de Madrid's official website and the CDI test scores from another official website⁵¹ (please refer to the Appendix). The datasets contain information on 1301 schools (private, public and charter schools), test scores for 6 years: 2008 to 2013, on three different courses (average grade for Mathematics, Spanish, and General Knowledge), the percentage of students who passed the exam and the percentage absent from the exam.

⁵¹ Further information available from:

http://www.madrid.org/cs/Satellite?c=CM_InfPractica_FA&cid=1142674185195&idConsejeria=1109266187254&idListConsj=1109265444710&idOrganismo=1142287728226&pagename=ComunidadMadrid/Estructura&pv=1142674189679.

Analysis strategy

The analysis strategy relies on the fact that the first year the school becomes part of the programme the bilingual curriculum is implemented only for students in their first year of primary education, and to successive cohorts in the following years. Students who were in their second year of primary education when the programme was implemented in their school never received bilingual education, while the rest of the younger students from then onwards did.

The outcome variables used to evaluate the level of school attainment are the results of the CDI test scores: the average test score and the scores for individual subjects. All students take the CDI exam once they finish grade 6 of primary education, during the month of May. Children in bilingual schools start studying in English in grade 1 and take the CDI exam in grade 6 after studying bilingually for 6 years; a period long enough to observe whether there is a negative effect on the children's performance in the CDI exam because of the extra time and effort dedicated to studying in English.

The CDI exam is an ideal way to measure whether students perform relatively worse because of their bilingual education as it specifically measures the "indispensable skills and competencies" that a child at age 12 (age at which they take the exam) must have (Comunidad de Madrid 2010). It consists of three different exams: Spanish Language, Mathematics and, since 2011, General Knowledge (Science). It is important to note that in the bilingual schools the first two subjects (Spanish and Mathematics) must be taught in Spanish, while the General Knowledge subject must be taught in English. The three tests that are part of the CDI exam are, however, in Spanish, as every public school in Madrid (not only the bilingual schools) has to take the CDI exam.

I compare CDI test scores for students in bilingual public schools with CDI test scores for students in non-bilingual public schools. The first issue of concern when trying to analyse the impact of the programme on school attainment is the fact that schools have to apply for the programme, instead of being placed in the programme randomly. Therefore these schools are not a representative sample of the population but a selected sub-sample. However, due to the fact that I have data on CDI test scores for 6 years, I circumvent this issue by performing a difference in difference analysis. This will compare a bilingual school's test scores minus its scores when it was not bilingual ("treated" schools) and the non-bilingual schools' test scores ("non-treated" schools) in that same year minus their previous test scores for pre-treatment years.

$$Y_{it} = \alpha + \beta_1 \text{Bilingual}_i + \beta_2 \text{Post}_t + \beta_3 \text{Bilingual}_i * \text{Post}_t + \varepsilon_{it}$$

Due to the phased nature of the programme, I can perform several difference in differences for the various cohorts as well as a general difference in difference for the four cohorts of bilingual schools. This analysis is restricted to public schools even though charter schools can apply for the programme because average grades for all courses are systematically lower in public schools with respect to charter and private schools. Restricting the sample makes the treatment and control groups more comparable.

MAIN RESULTS

Students' knowledge and capabilities of indispensable skills, expressed as their average grade in the CDI exam and their grades in the Spanish and Mathematics tests, do not seem to be negatively affected by studying in a

bilingual system. Bilingual schools continue to perform better than non-bilingual schools after they become bilingual, and cohorts of bilingual students perform better than the previous monolingual cohort in the same school, in line with the general increase in grades observed for all schools.

When looking specifically into the different courses bilingual students perform worse relative to their monolingual peers in the courses that must be taught in English. This could be due to the fact that this course is taught in English for the six years prior to the exam but the exam is administered in Spanish. Additionally, since these students are not yet bilingual, it does seem like there is a small trade-off in the courses they must study in English in terms of acquiring the concepts. This could also be due to the combined effect of teachers themselves facing difficulty teaching the course in English (some of them even have to start studying English in order to acquire the necessary level).

There is suggestive evidence of “learning by doing” by the teachers in the schools that become bilingual. Aside from the conversation assistants who are native speakers, the teachers who start teaching the courses in English are, in most bilingual schools, the ones who used to teach that same course in Spanish. These teachers either have a sufficient level of English or have to train specifically to start teaching the course in English.

POLICY RECOMMENDATIONS

Given the lack of evidence of bilingual students performing worse relative to the monolingual students, and their acquiring knowledge of English, a vital skill in today’s labour market, *I advocate for the continuation of the bilingual schools’ programme in the region of Madrid.*

It is important to bear in mind that since the amount of time spent in class by the students is limited, learning English comes at an initial cost in courses taught in English. The cohorts of bilingual students start performing worse once they study bilingually in the course that must be taught in English. I argue that it does not make sense to test in Spanish a course taught in English, especially when the students learning it are not yet fully bilingual (and therefore cannot proficiently translate concepts from one language to another). Therefore, *the General Knowledge test in the CDI exam should be redesigned* to make sure that it captures whether bilingual students are learning the skills and concepts as well as the monolingual students.

If bilingual students are not learning the necessary skills and concepts in General Knowledge, or at least not as well as the monolingual students, then *the method of teaching by the teachers in the bilingual schools should be revised.* It must be ensured that their teaching in English is not the cause for the discrepancy in students’ learning of the course content.

The effect of “learning by doing” that teachers in the bilingual programme engage in and other changes that transitioning to bilingual education causes, calls for *a longer-term study of the effects of bilingual education on average school performance.* An ideal outcome variable would be the Selectividad exam completed by all students who want to attend university in Spain. These students will have studied bilingually for 12 years when they reach the age at which the Selectividad test is done (17/18 years old), and this exam includes an English test, which the CDI exam does not. This is the ideal setting for a cost-benefit analysis of bilingual schools programme. This will have to be conducted from the academic years 2016/2017 onwards, when the students that started studying in the bilingual system (in 2004) will write the Selectividad exam.

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