

RESEARCH SUMMARY



The impact of the International Baccalaureate's Primary Years Programme on student performance: Evidence from Michigan and North Carolina

Summary developed by the IB Research department based on a report prepared by

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Background

The goal of this study was to evaluate the effects of the International Baccalaureate's (IB) Primary Years Programme (PYP) on student performance in two states in the United States: Michigan and North Carolina. The researcher used longitudinal administrative data, covering 2005—2006 to 2011—2012, to examine the effects of exposure to the PYP on students' academic performance in grades 3 and 5 in comparison to their non-PYP counterparts. This study explored data on mathematics and reading performance in both states, as well as fifth-grade science performance in Michigan.

Research design

The study used quasi-experimental methods in order to estimate the effects of the PYP on elementary school students' achievement in North Carolina and Michigan. The study focused not only on average impacts, but also explored impacts on relevant sub-groups of students, for example, economically disadvantaged students.

This study used detailed administrative data on public elementary school students in Michigan and North Carolina from 2005–2006 to 2011–2012. The rich administrative data available in these two states included students' subject-specific scores on state tests (for example, the Michigan Educational Assessment Program (MEAP) and North Carolina's end-of-course tests (EOCs)) and socio-demographic characteristics (such as sex, race and ethnicity, eligibility for free or reduced-price lunch (FRL) and limited English proficiency (LEP) status).

To estimate the impact of the PYP on student achievement the analysis employed two methods.

1. **School fixed effects:** The first method relied on comparisons over time in a school's academic

performance, measuring within-school changes in student achievement before and after the school adopted the PYP.

2. **Focused comparisons of similar schools:** The second method compared the performance of PYP schools with non-PYP control schools that were otherwise very similar. The group of control schools was comprised of schools in the process of applying to become authorized PYP schools. The assumption is that these schools are similar to PYP schools in unobservable ways that may cause a school to seek PYP authorization (such as resources, parental involvement, teacher and principal preferences and community support) and also shape student performance.

Findings

Highlights

The synthesized findings indicate that students in PYP schools performed better than students in non-PYP schools in the following areas:

- Math, 3rd grade, overall, Michigan
- Reading, 3rd grade, for economically disadvantaged students in Michigan
- Reading, 3rd grade, for economically disadvantaged students in North Carolina

There was no difference in student scores between PYP and non-PYP schools in the following areas:

- Reading 3rd grade, overall, Michigan
- Reading 5th grade, overall, Michigan
- Math, 5th grade, overall, Michigan
- Science, 5th grade, overall, Michigan
- Reading 3rd grade, overall, North Carolina
- Reading 5th grade, overall, North Carolina

Participation in the PYP negatively affected student scores in the following areas:

- Math, 3rd grade, boys in particular, North Carolina
- Math, 5th grade, boys in particular, North Carolina

Average impacts of the PYP

In Michigan, there is evidence that the PYP moderately boosts third-grade math achievement. Specifically, exposure to the PYP is associated with a 0.07 standard deviation increase in third-grade math performance. On average, the data found no impact of the PYP on reading achievement in third grade. For Michigan, fifth-graders performed similarly to their non-PYP peers on math, reading and science tests.

In North Carolina, exposure to the PYP appears to negatively affect mathematics performance, for students in both third and fifth grade. On average, the PYP decreases third- and fifth-grade math performance by about 0.10 standard deviations. There were no detectable effects of the PYP on reading scores in either third or fifth grade.

Impacts of the PYP by gender and economic disadvantage

In both Michigan and North Carolina, exposure to the PYP increases the reading performance of economically disadvantaged third-grade students (students that are eligible for free or reduced-price meals). The magnitude of this achievement bump is about 0.13 standard deviations in Michigan and 0.10 standard deviations in North Carolina. In Michigan, the evidence suggests that the PYP may benefit female and FRL students more than male and non-FRL students. For example, female students exposed to the PYP in Michigan perform about 0.07 standard deviations higher on fifth-grade science tests, compared to their female counterparts not exposed to the PYP. In contrast, the overall negative impacts of the PYP on third- and fifth-grade math performance in North Carolina are driven by large, negative effects of the PYP on boys' math achievement (of between -0.11 and -0.17 standard deviations).

Discussion

Overall, these analyses paint somewhat different pictures of the performance impacts of the PYP in Michigan versus North Carolina. The one common finding is that exposure to the PYP appears to increase the reading performance of economically disadvantaged third-graders in both states (by about one-tenth of a standard deviation) with little countervailing evidence of negative impacts on other students. These effects

occur during a time in which No Child Left Behind (NCLB)-induced interventions may have had their own, concurrent impacts on achievement. Nevertheless, the best evidence on NCLB finds no effects on reading performance (Dee and Jacob 2011).

This paper arrives at different conclusions about the effects of the PYP on students' mathematics performance, depending on the state. In Michigan, estimates suggest that fifth-graders perform about the same as their non-PYP counterparts, and third-graders exposed to the PYP perform about 0.07 standard deviations better. Yet, in North Carolina, the researcher finds negative effects of the PYP on third- and fifth-grade math performance, especially among boys. A number of factors could influence math scores, including variation in the content of state tests versus what is covered in the PYP math curriculum, implementation differences, variation in teacher quality, differences in students served by IB schools in each state, and differing pedagogical focuses across states based on the same PYP curriculum. It will be important for future research to examine why the PYP might affect the math achievement of similarly aged children differently in different states.

References

Dee, T. and Jacob, B. 2011. "The impact of No Child Left Behind on student achievement". *Journal of Policy Analysis and Management*. Vol 30, number 3. Pp 418–446.

This summary was developed by the IB Research department. A copy of the full report is available at www.ibo.org/research. For more information on this study or other IB research, please email research@ibo.org.

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