

Issue BRIEF

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Advancing Girls' Education in Developing Countries

IMAGINE

IMPROVE THE
 EDUCATION OF
 GIRLS IN NIGER

The IMAGINE project improved educational outcomes for primary school-age children in Niger—particularly girls—three years after program activities were completed, according to Mathematica Policy Research's long-term impact study.

The project, which was implemented by Plan International under the supervision of the United States Agency for International Development during 2008–2010, constructed new schools and conducted complementary activities whose goal was to increase girls' education. Each school featured on-site housing for female teachers, a preschool, separate latrines for boys and girls, and a water source.

Findings in Brief

Overall, the project raised primary school enrollment by 8.3 percentage points during the 2012–2013 school year, decreased absences of more than two consecutive weeks by 7.9 percentage points during the same school year, had a 0.13 standard deviation impact on math test scores, and had no impact on overall French test scores.



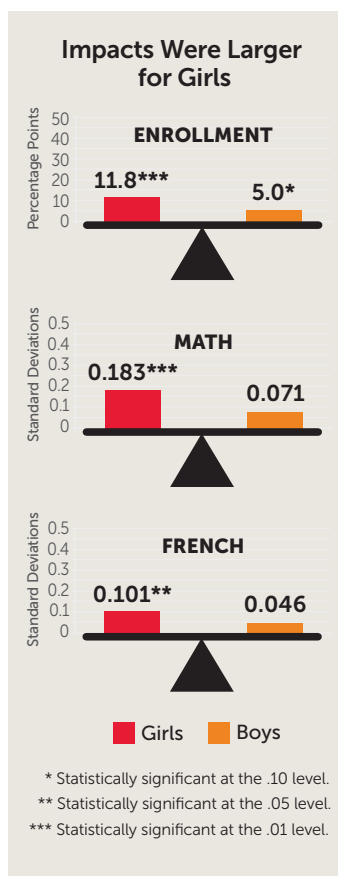
THE THRESHOLD PROGRAM IN NIGER

The Millennium Challenge Corporation (MCC) funded IMAGINE as a component of its Threshold Program (NTP) in Niger, dedicated to reducing corruption; registering more businesses; promoting land titling; and increasing girls' primary school enrollment, attendance, and completion.

IMAGINE, the girls' education component, was implemented in 10 departments in Niger with low enrollment rates for girls. The project included constructing 68 primary schools, each with on-site housing for female teachers, a preschool, playground, and separate toilet

facilities for boys and girls that were equipped with hand-washing stations. Each school was located near a water source to permit the installation of a borehole nearby. The program also included complementary interventions, such as teacher training and the provision of manuals, guidebooks, and paper materials.

In December 2009, MCC suspended the NTP in the midst of implementation due to undemocratic actions undertaken by the government. By this time, most of the construction activities were completed, which allowed for the evaluation to continue with a focus on the construction within the threshold program. Sixty-two functional schools were constructed, but the majority of the complementary activities were not implemented.



Key Research Questions

- What is the availability, quality, and functionality of the schools constructed under the IMAGINE project?
- Did the IMAGINE project have any lasting impacts on educational outcomes for children, including enrollment, attendance, and test scores?
- Did the impacts differ for girls versus boys?
- Did the impacts differ for children from households of diverse socioeconomic status?

SELECTED FINDINGS

Infrastructure. IMAGINE had no effect on the availability or number of schools in a village (Table 1). It did, however, have a sustained

positive effect on the presence, quality, and functionality of school infrastructure (Tables 1 and 2). IMAGINE schools had more classrooms, had more finished classrooms, and were higher quality than non-IMAGINE schools.

Table 1. Village characteristics

Characteristic	Treatment group	Control group	Difference
Number of:			
Schools per village	1.14	1.16	-0.02
Classrooms per school	6.44	4.97	1.47***
Classrooms made of finished materials per school	4.93	2.56	2.37***
Sample size (villages)	57	121	

Source: 2013 Niger Education and Community Strengthening (NECS) Wave 1 data collection, Village and School Infrastructure Questionnaire.

Note: Differences between treatment and control group means were tested using two-tailed t-tests. Control group means are regression adjusted, including commune fixed effects. The unit of analysis is the village.

*** Statistically significant at the .01 level.

Table 2. School characteristics

Characteristic	IMAGINE schools	Non-IMAGINE schools	Difference
Percentage of schools with:			
Potable water source present	79.6	19.4	60.2***
Potable water source functioning	50.0	9.2	40.8***
Toilet facilities present	100.0	40.0	60.0***
Toilet facilities functioning	98.1	28.7	69.4***
Separate toilets for boys and girls	98.1	29.3	68.8***
Preschool facility	98.1	23.2	74.9***
Playground	96.3	11.6	84.7***
Teacher lodging	98.1	9.4	88.7***
Female-only teacher lodging	94.4	1.6	92.8***
Sample size (villages)	54	124	

Source: 2013 NECS Wave 1 data collection, Village and School Infrastructure Questionnaire.

Note: Differences between IMAGINE and non-IMAGINE group means were tested using two-tailed t-tests. Non-IMAGINE group means are regression adjusted, including commune fixed effects. This table reflects schools that actually took part in IMAGINE versus those that did not. The unit of analysis is the school, rather than the village.

*** Statistically significant at the .01 level.

School enrollment and attendance.

IMAGINE raised primary school enrollment and attendance for children ages 6 to 14 (Table 3). Children living in treatment villages were 8.3 percentage points more likely to report having been enrolled in school during the past school year (2012–2013) and 7.9 percentage points less likely to report being absent more than two consecutive weeks during the past school year.

Learning. On average, children in treatment villages scored 0.13 standard deviations higher on the math assessment than children in control villages. Test scores in French for children in treatment villages were higher than in control villages, but the difference was not statistically significant (Table 3).

Differences between girls and boys.

IMAGINE had a large and significant impact on girls' enrollment, absenteeism, and test scores (Table 4) after three years, compared with more modest and less significant impacts for boys during that time. The intervention raised girls' enrollment by 11.8 percentage points. Impacts on girls' enrollment are 6.8 percentage points larger than for boys. Impacts



on math and French test scores for girls were consistently large and statistically significant, whereas the impacts for boys were smaller and not significant. Girls scored 0.11 standard deviations higher than boys on the math test, whereas differences between girls and boys on the French test were not statistically significant.

Table 3. Three-year impacts of IMAGINE

Finding	Treatment group	Control group	Difference
Child enrolled during past school year (percentage points)	73.6	65.3	8.3***
Child absent more than two consecutive weeks during past school year (percentage points)	34.3	42.2	-7.9***
Math score—normalized (standard deviations)	0.242	0.116	0.126**
French score—normalized (standard deviations)	0.055	-0.019	0.074
Sample size (children)	4,092	8,977	
Sample size (villages)	57	121	

Source: 2013 NECS Wave 1 data collection, Household Survey.

Note: Children ages 6 to 14 are included in the analysis sample. Differences between treatment and control group means were tested using two-tailed t-tests. Control group means are regression adjusted, including commune fixed effects. The analysis accounts for clustering of households within villages. For non-enrolled children, attendance is unconditional on enrollment, meaning those who are not enrolled are all scored as having been absent. The sample sizes shown are for the full sample; some regressions might reflect a smaller sample size due to missing data. Normalized test scores account for child age.

** Statistically significant at the .05 level. *** Statistically significant at the .01 level.

Table 4. Three-year impacts of IMAGINE, disaggregated by gender

Finding	Impact on girls	Impact on boys	Difference in impact (girls vs. boys)
Child enrolled during last school year (percentage points)	11.8***	5.0*	6.8**
Child absent more than two consecutive weeks during last school year (percentage points)	-10.5***	-5.2*	-5.3**
Math score—normalized (standard deviations)	0.183***	0.071	0.112**
French score—normalized (standard deviations)	0.101**	0.046	0.055
Sample size (children)	6,325	6,744	

Source: 2013 NECS Wave 1 data collection, Household Survey.

Note: Children ages 6 to 14 are included in the analysis sample. Differences between treatment and control group means were tested using two-tailed t-tests. Control group means are regression adjusted, including commune fixed effects. The analysis accounts for clustering of households within villages. For non-enrolled children, attendance is unconditional on enrollment, meaning those who are not enrolled are all scored as having been absent. The sample sizes shown are for the full sample; some regressions might include a smaller sample size due to missing data. Normalized test scores account for child age.

* Statistically significant at the .10 level. ** Statistically significant at the .05 level. *** Statistically significant at the .01 level.



LOOKING AHEAD

Many initiatives are under way to improve girls' education around the world. Our findings suggest that "girl-friendly" schools are an important part of this equation. Features such as separate latrines for boys and girls and housing for female teachers (leading to more female teachers after one year and possibly even more after several years) can help create a safe, accessible, and positive learning environment for girls.

The impacts of this project have grown over time and are larger than those found after one year.

The findings suggest that it can take more than one year of schooling for learning improvements to manifest. This suggests the need for more long-term follow-ups to demonstrate changes over time when evaluating projects related to education infrastructure.

Evaluation Design and Data Collection

The study assessed how children in IMAGINE villages fared relative to how they would have fared had IMAGINE not been implemented. The Niger Ministry of Education had already launched several initiatives aimed at improving girls' education, including school construction, and primary school enrollment was on the rise before implementation of IMAGINE. This study isolates the impact of the IMAGINE program from those other initiatives.

The government of Niger's support was key to the success of the evaluation. The government identified 204 villages as eligible to potentially receive IMAGINE and take part in the evaluation based on criteria such as the number of school-age girls in the village, access to water within the village, and distance to a major road. Sixty-five villages were randomly selected (and three villages were purposefully selected) to take part in the IMAGINE project; the remaining 136 served as control villages.

Outcome data on the IMAGINE intervention were collected in late 2013, approximately five years after random selection occurred and approximately three years after the program was suspended. The Centre International d'Etudes et de Recherches sur les Populations Africaines, a professional data collection firm based in Niger, collected the data to facilitate Mathematica's study. Data sources included a household survey of randomly selected families with school-age children in study villages, the results of math and French tests administered to all children ages 6 to 14 in each household regardless of school enrollment status, a survey administered to a village leader, direct observation of the infrastructure of the primary school in the village, and a village-wide census.

