

Differences in Educational Outcomes of Primary School Pupils: Giving Equal Opportunity to pupils with disabilities and pupils without disabilities in Sub-Saharan Africa

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Introduction

- Children with disabilities continue to face enormous difficulties in accessing education, particularly in sub-Saharan Africa, despite the special attention given at the World level to people with disabilities
- Some studies have analyzed the effect of disability status on access to education, poverty, and access to employment in developing countries (Mittra et al, 2013 and Mizunoya & Mittra, 2013 for example).
- But these studies did not consider differences in skills between students with disabilities and students without disabilities.
- This study aims to analyze the differences between pupils with disabilities and pupils without disabilities in terms of their proficiency in mathematics and in reading/language and its interaction with certain sociodemographic characteristics such as gender, socioeconomic status, and the location area, in sub-Saharan Africa.



Materials and methods

- Data from the sixth-grade database of the "Programme d'Analyse des Systèmes Éducatifs" (PASEC, 2014) have been used
- This database contains information on 676 schools and 31,213 pupils across ten sub-Saharan African countries (Benin, Burkina Faso, Burundi, Cameroon, Chad, Congo, Côte d'Ivoire, Niger, Senegal, and Togo).
- The level of performance in reading and the level of performance in mathematics are the dependent variables and both were dummies
- Pupil disability status is the explanatory variable of interest
- The other explanatory variables are the pupil's personal characteristics such as age, gender, and pupil's work outside of school hours, socio-economic status, school characteristics, teacher characteristics and class characteristics.
- A binary logit model was used to analyze how disability status affects pupils' proficiency in mathematics and reading/language.

The estimated model to analyze the differences between pupils with disabilities and pupils without disabilities in terms of their proficiency in mathematics and in reading/language, and the interaction of disability with gender, socioeconomic status, and location area, is as follows:

$$Prob(Performance = 1|X) = \alpha_0 + \alpha_1 D_i + \alpha_2 group_i + \alpha_3 (D_i \times group_i) + \alpha_4 K_i + \varepsilon_i$$

Where D denotes the disability status of the pupil; group, the sociodemographic group; K denotes all other explanatory variables

Results and discussions

- The disability situation seems to reduce the reading and mathematics skills of the students.
- All else equal, the chances of a pupil with a disability to achieve an adequate level of proficiency in reading decreased by more than 6 percentage points compared to pupils without a disability
- Similarly, the chances that a pupil with a disability will achieve an adequate level of proficiency in mathematics decreased by more than 7 percentage points compared to pupils without a disability
- The results also revealed that the effect of disability status on proficiency in mathematics differs by gender, location, and socioeconomic status, while the effect of disability status on reading/language skills differs only by socioeconomic status

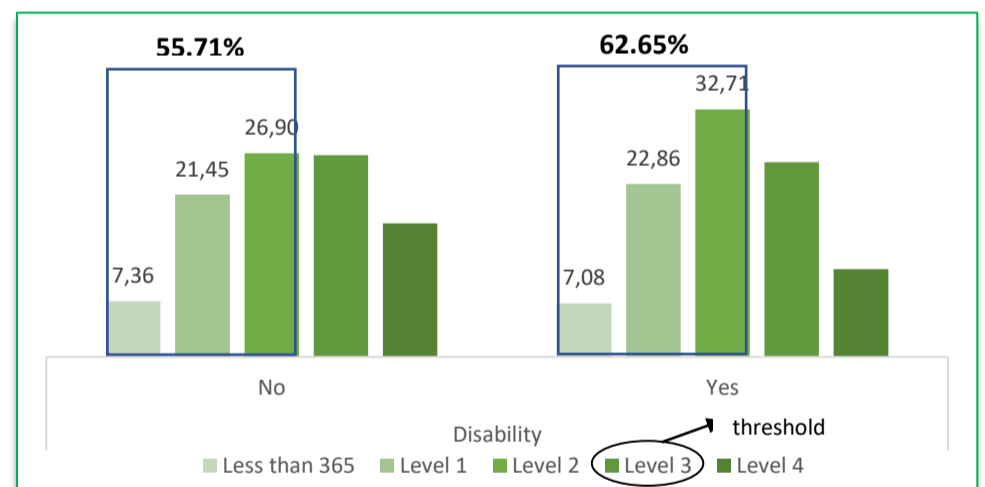


Figure 1: Descriptive statistics of pupils' proficiency levels in mathematics and reading / language

Table 1: Interaction effect of disability and sociodemographic groups

Variables	Sufficient level of proficiency in reading / language			Sufficient level of proficiency in mathematics		
	(1)	(2)	(3)	(4)	(5)	(6)
The pupil has a disability =Yes	-0.061 (7.27)***	-0.084 (11.62)***	-0.059 (7.98)***	-0.028 (3.63)***	-0.062 (8.67)***	-0.012 (1.85)*
Gender of the pupil	-0.013 (2.17)**	-0.016 (3.07)***	-0.016 (2.95)***	0.028 (4.72)***	0.029 (5.93)***	0.030 (6.11)***
Location area	0.118 (17.88)**	0.118 (17.87)***	0.123 (16.39)***	0.073 (10.43)**	0.073 (10.35)**	0.087 (10.82)***
Belonging to the poorest SES	-0.033 (5.41)***	-0.048 (6.86)***	-0.033 (5.38)***	0.004 (0.72)	-0.022 (3.39)***	0.005 (0.83)
Disability crossed with the pupil's gender	-0.007 (0.58)			0.010 (0.94)		
Disability crossed with belonging to the poorest SES		0.052 (4.41)***			0.089 (8.33)***	
Disability crossed with location area			-0.016 (1.38)			-0.044 (3.62)***
Prob > chi2	0.00	0.00	0.00	0.00	0.00	0.00
Pseudo R2	0.18	0.18	0.18	0.12	0.13	0.13
N	28,199	28,199	28,199	28,199	28,199	28,199

Robustness checks

Table 2: ATT estimates by sociodemographic characteristics

Sociodemographic groups	Matching methods								
	Nearest Neighbor			Stratification			Radius		
	Treated	Control	ATT (%)	Treated	Control	ATT (%)	Treated	Control	ATT (%)
Sufficient level of proficiency in reading / language									
All	8,402	18,025	-5.9*** (0.007)	8,402	20,88	-5.5*** (0.006)	8,4	20,876	-6.9*** (0.006)
Sufficient level of proficiency in mathematics									
All	8,402	20,876	-1.0 (0.006)	8,402	20,876	-1.0** (0.005)	8,400		

Conclusion

- Governments should provide schools with the additional special facilities needed for the particular accommodation of pupils with disabilities
- governments in Sub-Saharan Africa should particularly target students living in rural areas and belonging to disadvantaged groups such as the poorest SES quintiles