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Educational, Scientific and
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Santiago Office
Regional Bureau for Education in
Latin America and the Caribbean


Number 3
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terce
THIRD REGIONAL COMPARATIVE AND EXPLANATORY STUDY

IN SIGHT

What is behind gender inequality in learning achievements?



 **TERCE identifies significant subject-based gender inequalities in learning achievements. Male students have a considerable advantage in mathematics and female students have a similar advantage in reading and writing.**

 **It is therefore essential to review the curriculum, textbooks and teaching materials, so that men and women are equally portrayed in activities of different natures. Thus, it is imperative for images and messages to include both males and females performing equally in scientific activities, caring for small children, and doing household chores, among other things.**



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In line with the UN Agenda 2030 based on the Sustainable Development Goals, UNESCO defines gender equality as “the right to access and participate in education, as well as to benefit from gender sensitive educational environments, processes and achievements, while obtaining meaningful education outcomes that link education benefits with social and economic life” (UNESCO, 2010, p.12).

Existing research identifies several significant, subject-based gender inequalities in education. Male learners have significant advantages in mathematics and female learners have no less significant advantages in reading and writing (Román Carrasco & Murillo Torrecilla, 2009; Treviño et al., 2010a). Such considerable differences in achievement may have important consequences for the future wellbeing of students. Low literacy skills among boys may increase the likelihood of grade repetition (retention) and early dropout and, as a result, lower male participation in higher education and reduced career opportunities. Similarly, low achievement in mathematics and science among girls may reduce their interest in Science, Technology, Engineering and Mathematics (STEM) careers (considered to offer greater opportunities for higher incomes).

The gender gap in educational achievement based on the Third

Regional Comparative and Explanatory Study (TERCE) has been analyzed for the purpose of understanding this phenomenon in Latin America.

MAIN FINDINGS

Do boys and girls have similar knowledge in the core areas of the educational curriculum in third and sixth grade? Analysis of 2013 TERCE assessment results revealed that boys and girls do not have similar knowledge in several core areas. Test results revealed a strong advantage for male learners in mathematics (see graph 1). However, the extent of this advantage differed notably by grade. Third grade mathematics assessment revealed gender gaps in test performance, but relative gender advantages varied between countries; female students scored higher in half of the study countries and male students scored higher in the other half.

Analysis of sixth grade mathematics performance revealed a clear gender gap in favor of male students. Conversely, female students tended to perform significantly better on reading and writing tests. Female students in both third and sixth grade obtained consistently higher test scores than male students in both reading and writing (see graph 2).



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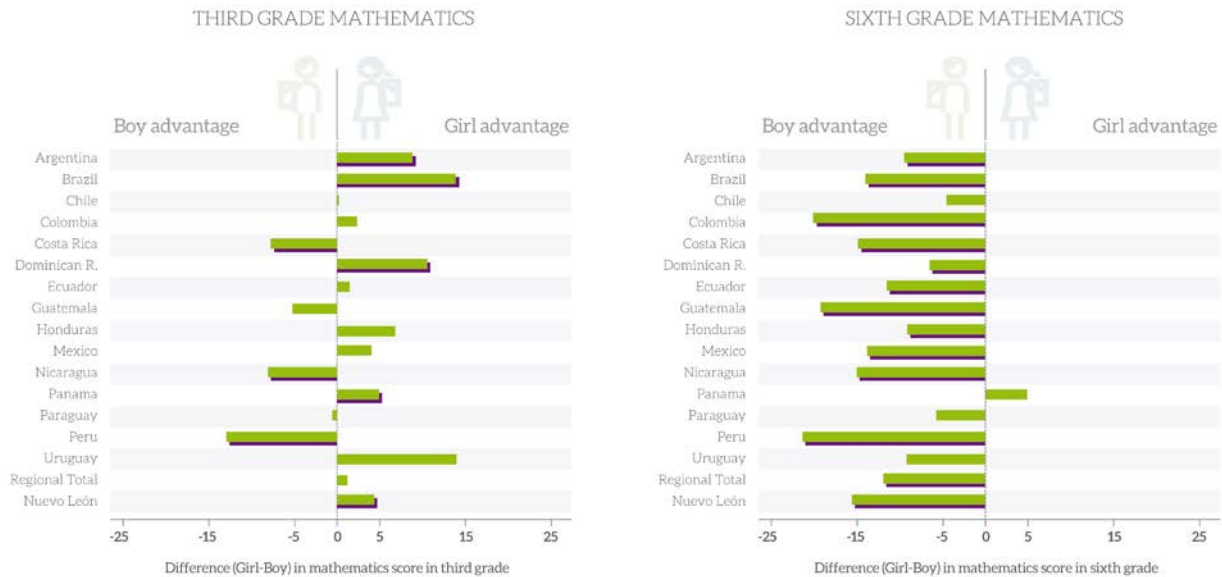
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Graph 1: Difference (Girl-Boy) in mathematics score in third and sixth grades



Source: UNESCO, Gelber et al. 2016. *Gender inequality in learning achievement in primary education.*
What can TERCE tell us? Santiago. [Link to excel file](#)

The fact that these subject-based gender advantages were greater among sixth graders than third graders suggests that these gaps may be related to continuing primary school education (UNESCO, Gelber et al., 2016). In other words, data indicate that the gaps present in third grade are widened in sixth grade.

In contrast to the results for reading, writing, and mathematics, the test results for science were fundamentally mixed in terms of gender achievement inequalities. As with the third grade mathematics results, only a few countries had a statistically significant gender gap in science achievement and the gender advantage was split.

Have these similarities (or differences) in core curriculum knowledge changed between 2006-2013? In general, comparison of TERCE assessment results (2013) with SERCE results from 2006 indicated that clear gender gaps in certain subjects were not new occurrences. As in 2013, test results from 2006 revealed strong general advantages for male learners in mathematics and for female learners in reading. However, some notable changes did occur between these assessments. Between 2006 and 2013 the performance advantage of female third graders in reading generalized across the region. The performance advantage of sixth grade girls in reading scarcely changed. However, the extent of this advantage reduced in almost all of the study areas during this



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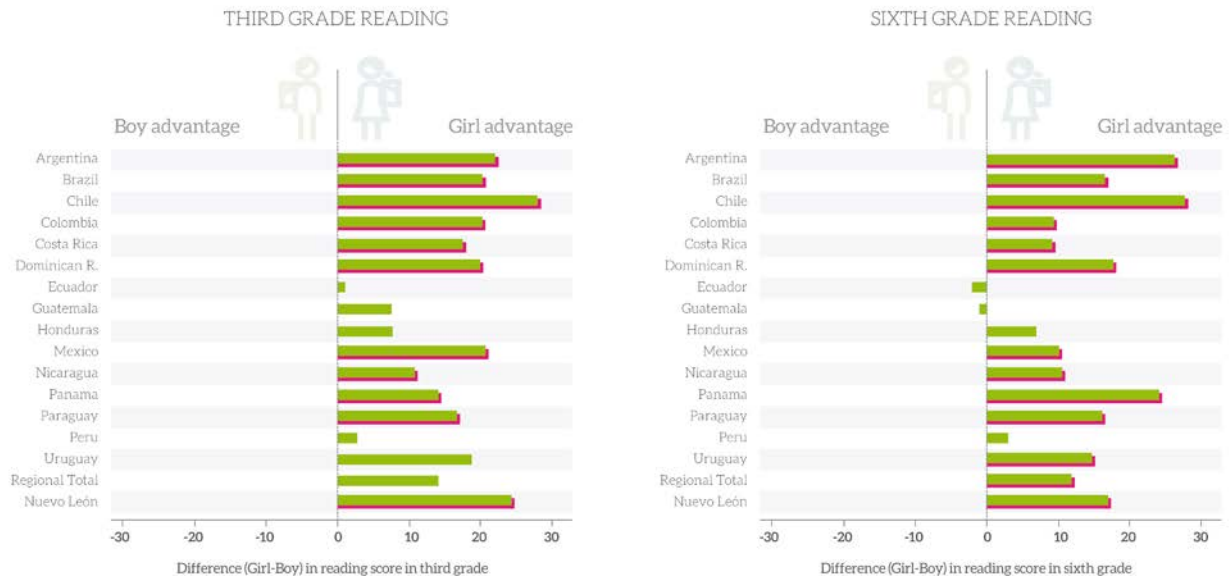
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Graph 2: Difference (Girl-Boy) in reading score in third and sixth grades



Source: UNESCO, Gelber et al. 2016. *Gender inequality in learning achievement in primary education.*

What can TERCE tell us? Santiago. [Link to excel file](#)

same period. The number of countries with gender inequalities in third grade mathematics achievement and the extent of those inequalities decreased from 2006 to 2013. Gender inequalities in sixth grade mathematics performance also decreased in some countries between assessments. However, the male student performance advantage in sixth grade mathematics generally increased in the study countries in terms of both average score and variability. Importantly, for reading and mathematics, both assessments indicated that gender inequalities were greater among sixth graders than third graders, further suggesting possible correlation with primary school socialization noted above.

Which factors contribute to our understanding of the identified gender differences? A number of

hierarchical models are found within TERCE's gender report, where variables were considered, both at the school level (school socioeconomic level (SES), region, administrative dependence, teacher practices), and at the student level (student SES, gender of the student, retention, time dedicated to study, mother with higher education, parental expectations of higher education, parental supervision, reading habits, perception of the parents on whether female students have greater skills in mathematics/science/reading, and the perception of the student of the school environment).

None of the study variables could directly explain the achievement gaps in all of the considered disciplines and school grades. However, when



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considered jointly and as a whole, the study variables did provide some insight. Analysis to explain the gender gaps in mathematics achievement found similar results across the region. The selected study variables, as a whole, accounted for female learners' advantage in mathematics (only in third grade). However, the same explanatory factors could not account for male-learner advantages in the same subject.

The variables that explain the gender gap in third grade reading achievement in Colombia and Paraguay were: socioeconomic level (SES), rural school, urban public school, female student, retention, student SES, time dedicated to study, mother with higher education, parental expectations of higher education and parental supervision.

In Costa Rica, the Dominican Republic, Mexico, Paraguay, Uruguay, and Nuevo León, were: school SES, rural school, public urban school, female student, retention, student SES, reading habits, time dedicated to study, mother with higher education, parental expectations of higher education, parental supervision and teacher practices.

Different variables explained gender gaps in science achievement, namely: parental expectations, mother education,

teacher practices, retention, reading habits and time dedicated to study.

Analysis showed a consistent trend in which female-learner performance advantages were explained by the considered variables in the statistical models, while the achievement gaps in favor of boys could not be similarly explained. Therefore, it is highly likely that cultural practices, difficult to capture through quantitative studies, are behind gender gaps in mathematics.

RECOMMENDATIONS

The present study has focused more on giving an account of gender inequalities in learning achievement in the countries participating in TERCE rather than a policy analysis. However, a number of general policy recommendations are suggested below based on the main findings.

First, national and local governments should make gender inequality a priority issue in terms of public policy. This implies a reinforcement of the messages and orientations to the educational system regarding the need to provide opportunities so that female learners can improve their achievement in mathematics and male learners in



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literacy (reading and writing). Moreover, it is necessary to constantly monitor gender inequalities in education in terms of access, educational paths and learning achievement. Official national reports are necessary in order to raise awareness in the educational system and the general population about gender inequality as a problem that needs to be solved.

Second, it is necessary to make a revision of the curriculum, textbooks and teaching materials in order to capture and eliminate gender bias. Furthermore, the curriculum and teaching materials are required to equally portray men and women in different activities. For instance, images and messages need to equally include men and women in scientific activities, in childcare activities and in household chores, among others.

Third, it is necessary to reformulate pre-service and in-service teacher training with a gender focus, concerned with providing equal opportunities to female and male learners, as well as tools to implement equal interactions in the daily classroom activities. Moreover, this training should provide tools to allow teachers to observe and evaluate their own practices with a gender approach.

Finally, we need more research in order to understand the educational aspects behind gender inequality in

Latin America. In particular, we require studies regarding the interactions in the classroom that address how learning opportunities are shaped. In addition, it is necessary to study the expectations and messages transmitted by families to girls and boys regarding their gender roles and what type of education they are encouraged to seek. Accumulating this evidence, will contribute to the design of more effective policies directed towards the social practices that shape gender opportunities and, in the end, inequalities.

Event
“Promoting gender equity and equality in Education 2030”

April 5, 2016
9am to 1pm
Crowne Plaza Hotel,
Santiago, Chile.

[More information](#)

In our next edition: Teachers



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Bibliographical references for TERCE in sight No.3

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**Latin American Laboratory for Assessment of the Quality of
Education (LLECE)**

Third Regional Comparative and Explanatory Study (TERCE)

TERCE Databases

“Terce in sight” is a communicational product of OREALC/UNESCO Santiago aimed at any person interested in educational topics, especially decision-makers. Its objective is to provide analysis on a specific topic that is part of the TERCE findings, and that guides decisions regarding educational policy in the region. The information can be quoted, as long as the source is referenced.