

Basic education for a better future



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Basic education for a better future

Over the past 30 years, countries in Latin America and the Caribbean (LAC) have achieved significant progress in basic education,^a particularly in terms of coverage. However, available data reveals deficiencies in skill acquisition among children and youth in LAC, which are even more pronounced in the most vulnerable populations.

The challenges faced by education systems in expanding access while maintaining quality hinder the ability of LAC countries to sustainably generate well-being and economic growth. For example, it is estimated that the region's GDP could increase eightfold in the long term if all 15-year-old students reached a basic level of mathematical competence. This includes tasks such as performing routine activities based on clear instructions and existing information.^{1,b}

Education is not only a fundamental human right but also one of the most important mechanisms for reducing poverty and breaking its intergenerational cycle within families.

Providing access to quality education that ensures foundational skills from the earliest levels is a priority for LAC. It is especially important to extend this access to children and youth in the most vulnerable contexts. Education is not only a fundamental human right but also one of the most important mechanisms for reducing poverty, breaking its intergenerational cycle within families, and boosting economic productivity.

Committed to advancing sustainable development, CAF supports the efforts of the countries throughout the region to strengthen basic education systems. In the past decade, the Bank has allocated approximately USD 1.31 billion to initiatives aimed at improving the quality of educational infrastructure, enhancing teacher competencies, and fostering digital transformation processes to improve basic education. Additionally, CAF supports initiatives to strengthen postsecondary education (Box 1) but the impact of these efforts will be discussed in a future report.

a CAF's actions described in this document focus on basic education and do not include approximately one-third of CAF's education portfolio dedicated to postsecondary, technical, and vocational education.

b This refers to level 1 competencies in mathematics as defined in the PISA assessment (OECD, 2018).

CAF's actions in postsecondary education

Approximately one-third of the resources approved by CAF for the education sector in the last decade have been assigned to postsecondary education. In total, USD 646 million has been approved across nine credit operations, benefiting more than 100 institutions and about 10 thousand students in Argentina, Colombia, and Panama.



» All operations included at least one **infrastructure component** to increase the capacity of educational institutions, improve or expand existing infrastructure.



» 5 operations focused on **supporting teacher training** through advanced programs, continuous professional development, or specialized pedagogical training.



» 5 operations promoted the **technological enhancement of educational institutions**.



» 3 operations targeted the **strengthening of curriculum design**.



» 4 operations allocated resources to **strengthening the educational management of institutions** in areas such as admissions, recruitment processes, performance indicators, governance, and financial sustainability.

CAF's efforts in basic education align with the achievement of the Sustainable Development Goals (SDGs) outlined in the United Nations 2030 Agenda. These initiatives have directly supported member countries in ensuring quality education (SDG 4) while contributing to advancing several other goals:



This ImpactoCAF document aims to analyze the potential impact of CAF's actions on improving coverage and learning outcomes in early childhood, preschool, and primary and secondary education.

Education, human capital, and prosperity

From the moment of conception, humans begin learning, and throughout life, we accumulate a wealth of knowledge and skills essential for survival. Newborns learn to recognize their loved ones and trust them to provide care. As we grow, we acquire increasingly complex knowledge that is vital for ensuring our own prosperity and that of our communities.



A country's economic performance is closely tied to the coverage, duration, and, most importantly, the quality of its education system.

This knowledge forms part of human capital, encompassing competencies useful across various aspects of life, such as language and communication skills, numerical abilities, socio-emotional skills, and so-called [21st-century skills](#) like problem-solving and creativity—essential for the modern workplace. Socio-emotional skills, in particular, play a crucial role by enhancing acquired knowledge and helping individuals build harmonious, productive, and constructive relationships with their surroundings. These skills also foster perseverance, self-control, focus, and self-efficacy.

Alongside family, formal education is the primary determinant of human capital. During the school years, children gain the knowledge and skills necessary to contribute value to society and live within a community. Empirical evidence shows that a country's economic performance is closely linked to the coverage, duration, and, above all, the quality of its education system.²

Individual benefits of education

The skills acquired through education are valuable for many reasons: they increase productivity, foster innovation, improve decision-making, and promote social harmony.

Individuals with greater human capital—defined as the combination of cognitive and socio-emotional skills—are more likely to be employed, secure better jobs, and earn higher incomes. On average, an additional year of education can increase lifetime earnings by 8% to 10%.³ Moreover, individuals with higher education levels are



less likely to engage in criminal activities, adopt healthier habits, better protect themselves from risks, and make more informed financial and family planning decisions.⁴ Notably, women with higher education levels are less likely to experience domestic violence and are more involved in family decision-making.⁵ Beyond personal benefits, human capital creates positive externalities for other family members by fostering better decisions in areas such as nutrition, education, and health.⁴

Societal benefits of education

The individual benefits of education also translate into broader societal impacts, as higher levels of human capital can boost productivity, which, in turn, drives economic growth.⁶ For example, improving the average educational performance of children in LAC by 30% could increase the region's annual growth rate by two percentage points.² This growth would be equally propelled by enhancements in cognitive and socio-emotional skills.⁷

Similarly, the educational attainment of a population contributes to the inclusivity and effectiveness of institutions by promoting greater civic engagement, enhancing social cohesion, and increasing support for democratic institutions.⁸

In LAC, challenges persist in expanding educational coverage among the lowest socioeconomic groups, as well as in improving educational quality. While quality issues affect all levels, they are particularly severe and damaging for the most disadvantaged sectors.

Basic education in LAC: Access and quality

Access

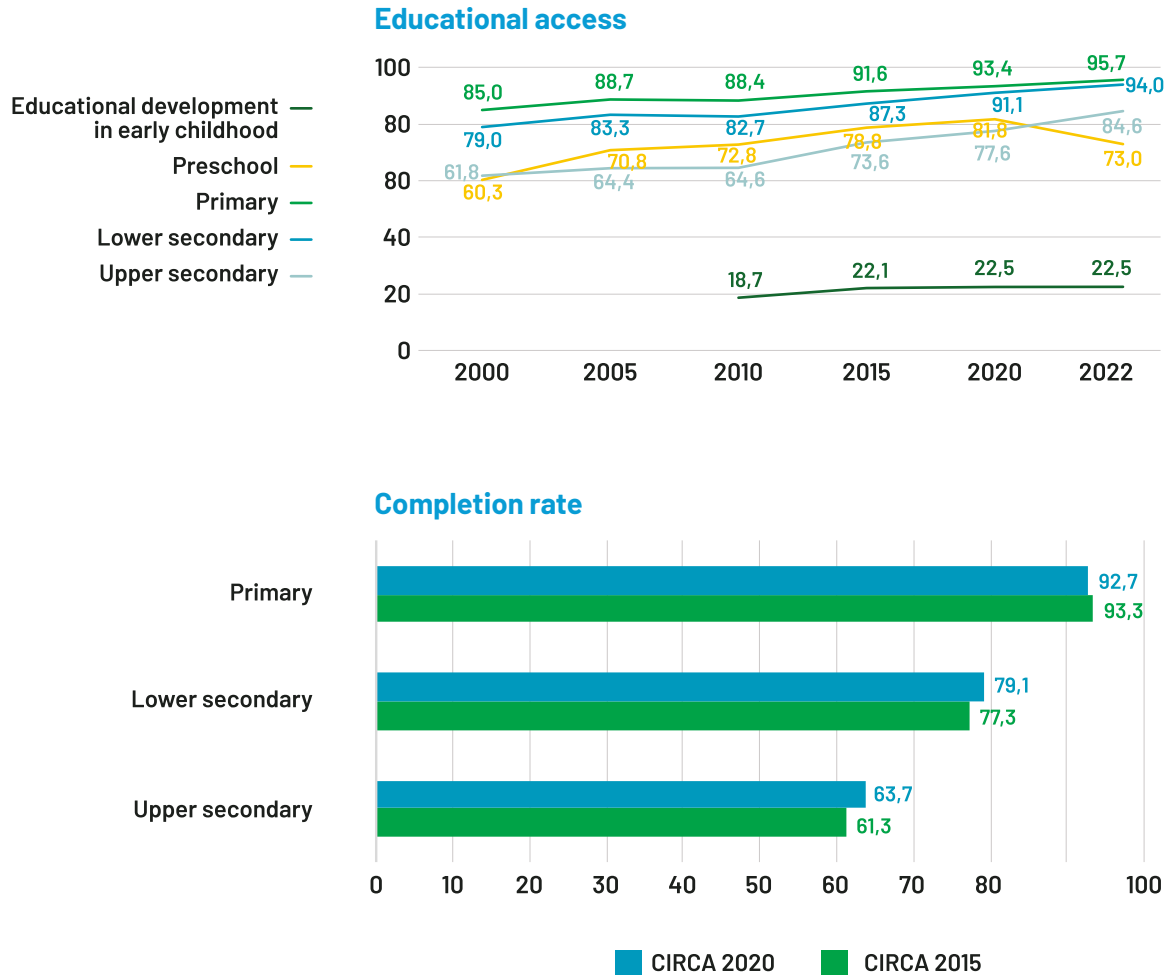
Significant progress in educational coverage has been achieved in LAC since the late 20th century, particularly in early childhood education^c and secondary education. Gender parity in access to education has also improved across the region. However, challenges remain in reaching the lowest socioeconomic groups, where gaps in access are more pronounced. These challenges are further exacerbated by issues of educational quality, which affect all levels of education but are especially severe and harmful for disadvantaged populations.⁹



^c Early childhood education includes both care and developmental services for young children and preschool education.

While primary education in LAC is nearly universal, a substantial portion of the population lacks access to formal education in early childhood and secondary levels (see Graph).

Graph. Evolution of access^{a/} and completion rates across educational levels^{b/}



Notes: a/ For early childhood and preschool stages, the gross enrollment ratio is used (the proportion of the official school-age population enrolled at the respective level). For later stages, the net attendance rate is employed (the proportion of the official school-age population attending primary, lower secondary, and upper secondary education).

b/ The UNESCO (2022) report defines early educational stages according to the framework established under the monitoring system for SDG 4. The early childhood development stage serves children aged 0–2 years. The preschool stage caters to children aged 3 years up to the formal starting age of primary education, which varies by country. The report also applies the International Standard Classification of Education (ISCED 2011) to define two levels of secondary education: ISCED 2 (lower secondary) and ISCED 3 (upper secondary). The duration of each level may differ by country, but the typical age for attending the final grade of lower secondary education (ISCED 2) is 14 years (UNESCO).

Source: CAF based on SITEAL (2024).

In 2020, only one in five children under the age of 3 had access to early stimulation and development services. A lack of adequate infrastructure and difficulties in meeting minimum quality standards are specific challenges for educational systems serving this age group.¹⁰ For preschool-aged children, enrollment has been nearly 73% since 2020. However, significant coverage gaps remain, particularly among the lowest socioeconomic groups (an 8-percentage-point gap compared to the highest quintile) and, to a lesser extent, in rural areas (a 5-percentage-point gap).



Access to primary and lower secondary education has been nearly universal since 2000. Nevertheless, approximately 1.7 million children of primary school age and 2.3 million adolescents of lower secondary school age remain out of school.

The average completion rates in the region are 93% for primary education and 79% for lower secondary education. However, like school participation, these rates have shown signs of stagnation in recent years.

In the later years of secondary education, the most significant challenges are access and dropout rates, with considerable variation across countries. One in five adolescents does not attend upper secondary school, and of the four who do, slightly more than half complete their studies. These figures have remained largely unchanged since 2015.

The region also exhibits high levels of inequality in secondary school completion rates. Adolescents from low-income families have a completion rate of 47%, compared to 89% for those from the highest-income quintile. In terms of gender, completion rates in secondary education are generally higher for women than for men, consistent with trends observed in countries of the Organisation for Economic Co-operation and Development (OECD).¹¹



In LAC, many children and adolescents lack basic skills in areas such as math, language, and science, and no significant progress has been observed over the past decade.



Quality

In LAC, many children and adolescents lack basic skills in areas such as math, language, and science, and no significant progress has been observed over the past decade.

The results of the 2019 Regional Comparative and Explanatory Study (ERCE)^d indicate that in third grade, only half of children can make inferences based on explicit information in age-appropriate texts, while in sixth grade, only one-third can infer meaning from specific or secondary ideas. In mathematics, just half of third graders can identify geometric elements, and only one-sixth of sixth graders can interpret data from tables and graphs.¹² Although overall progress has been positive since the study's first edition in 2013, improvements have been minimal, and in some cases—such as third-grade reading—results have declined.¹³

In secondary education, the situation is similar. The 2022 PISA assessment found that three out of four 15-year-olds in LAC are unable to perform basic mathematical tasks using clear instructions and available information. Additionally, slightly more than half cannot understand the literal meaning of texts.¹⁴ The region's mathematics performance gap compared to OECD countries is equivalent to five years of schooling, extending to ten years when compared to Singapore, the highest-performing country.

What is particularly concerning about these results is that the region's trend since 2015 has not been positive, even beyond the negative impacts of the pandemic on learning outcomes. In six of the nine countries that participated in PISA 2015, 2018, and 2022, mathematics performance deteriorated.^e Furthermore, although there are significant differences in performance based on socioeconomic status, more than half of the youth in the highest-income quintile still lack minimum competencies in mathematics.¹⁵

Although data on digital skills in LAC is limited, the results of the International Computer and Information Literacy Study (ICILS) for Chile and Uruguay indicate that while most 13- and 14-year-olds understand how information and communication

^d Regional Comparative and Explanatory Study (ERCE), conducted by UNESCO's Latin American Laboratory for Assessment of the Quality of Education (LLECE).

^e The participating countries were Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico, Peru, the Dominican Republic, and Uruguay. The three countries where mathematics performance did not decline were Argentina, Chile, and the Dominican Republic.

technologies (ICT) work and can use them under direct instructions to search for information, only one-fifth are capable of using ICT independently or solving technology-related problems.¹⁶

Moreover, women consistently outperform men in reading at all educational levels, while men generally achieve better results in mathematics. Although both gaps have narrowed over time, the reduction in the mathematics gap has been less pronounced. Some studies attribute this trend to the higher confidence men have in their mathematical abilities compared to women. In the medium term, lower confidence levels among women affect their career aspirations and limit their access to higher-paying fields, particularly in science, technology, engineering, and mathematics (STEM).¹¹



CAF's actions and impact

CAF's initiatives in basic education seek to improve learning outcomes, skills, and school performance across the region as a means to foster equitable, inclusive, and human-centered social development.

Since 2014, CAF has approved funding totaling USD 1.31 billion, benefiting over 4.3 million children and youth across the region, from early childhood to secondary education.

These operations incorporate a range of interventions tailored to the specific needs of the institutions or areas served. The following section outlines the number of operations supporting various types of interventions.

Of the 39 approved operations:

- » 21 have focused on educational infrastructure, 11 of which specifically targeted early childhood education. Additionally, 16 included institutional equipment, with some providing pedagogical resources and in others, technological tools.
- » 12 included components for teacher training, primarily aimed at improving pedagogical processes.
- » 13 sought to support the digital transformation of educational institutions, whether through the provision of equipment, connectivity, or software, or by training teachers and staff responsible for educational management.
- » 9 aimed to strengthen institutional management through various actions, including the integration of technology in management, measurement of resource utilization or learning outcomes, and general project management for educational initiatives.

CAF'S ACTIONS IN THE LAST 10 YEARS (2014–2024)

\$1.31 billion dollars

4.3 million children and young people benefited

39 operations

18 credit operations

21 technical cooperation operations



21
educational infrastructure projects



11
early education infrastructure projects



12
teacher training programs



13
digital transformation initiatives



9
educational management strengthening initiatives

CAF has also provided support through non-reimbursable technical cooperation resources in other areas related to preventing school dropout and strengthening socio-emotional skills.

CAF's education operations have included specific components addressing gender and the inclusion of individuals with special needs or disadvantaged populations, where feasible. Some initiatives have sought to tackle barriers to access and educational



achievement faced by women, individuals with special needs, and vulnerable groups, as well as to address gender gaps identified within the context of funded interventions.

Other projects have promoted greater interest and participation by women in STEM fields and improved access to technological resources. Similarly, some operations have addressed school dropout issues, which also have a gender dimension.

Lastly, CAF has edited various knowledge dissemination products to support decision-making by educational institutions in the region. These initiatives have been undertaken both within the context of financing operations and independently (see Annex).

The following section outlines CAF's actions alongside some of their potential impacts, based on available literature.

Infrastructure

Educational infrastructure is a cornerstone of any education system. Approximately half of school principals in LAC countries participating in PISA 2018 reported that deficits in physical school infrastructure negatively affect their schools' ability to provide quality education.¹⁷

In response to these challenges, CAF has approved 21 credit operations since 2014 in Argentina, Brazil, Colombia, Ecuador, El Salvador, Panama, Peru, and Uruguay. These projects have benefited more than 2,000 educational institutions across early childhood, primary, and secondary education levels.





CAF'S ACTIONS IN THE LAST 10 YEARS (2014–2024)

21

educational infrastructure operations

→ **86%**

construction of new infrastructure
or expansion of spaces

→ **67%**

improvement of existing infrastructure

8 countries supported

Argentina, Brazil, Colombia, Ecuador,
El Salvador, Panama, Peru, and Uruguay

+2000 educational institutions benefited

→ **11 operations**

Early education (approximately 0–6 years)

→ **19 operations**

Primary education

→ **19 operations**

Secondary education

The interventions carried out in both urban and rural areas include classrooms, libraries, laboratories, playgrounds, and sports facilities, as well as the provision of water, sanitation, restrooms, electricity, and internet services, along with spaces for teaching and administrative staff.

CAF's infrastructure interventions, implemented in both urban and rural areas, include the construction of classrooms and other learning spaces such as libraries, laboratories, playgrounds, and sports facilities. These projects also address the provision of essential services, such as water, sanitation, restrooms, electricity, and internet, as well as spaces for teachers and administrative staff.

While evidence on the impact of improved educational infrastructure on access and quality is generally positive, it remains limited and often shows small effects.¹⁸

In the short term, CAF-funded infrastructure could increase school enrollment by approximately 1.7% in primary education and 5.7% in secondary education. The greatest potential impacts are observed in remote areas with limited educational services, particularly at the early childhood and secondary levels. However, the increase in school attendance resulting from improved infrastructure is expected to be minimal across all levels of education.¹⁹

In terms of learning outcomes, the impact of CAF-financed infrastructure could be positive, though likely small and, in some cases, statistically insignificant. For example, infrastructure investments could lead to performance improvements of around 1% in mathematics and 0.1% in language, both in primary and secondary education.¹⁹

It is important to highlight that some specific studies do find impacts that are both significant and of a certain magnitude,²⁰ suggesting that educational infrastructure investments may have greater potential in specific contexts, such as remote areas with limited access to educational facilities. In this regard, CAF has financed seven credit operations aimed at interventions in remote or underserved areas with inadequate infrastructure.

For CAF-funded interventions aimed at improving existing educational spaces, evidence suggests that their potential impact on learning outcomes is positive but modest. Improvements to electricity and water services in schools generally have minimal effects, except in cases where sanitation facilities are included. Access to safe and private restrooms, in particular, has been shown to positively impact learning outcomes, especially for girls, who have higher school attendance rates when such facilities are available. Similarly, the construction or upgrading of school libraries and science laboratories has limited potential to increase attendance or improve learning outcomes.²¹



On the other hand, the provision of school equipment (e.g., desks, chairs, chalkboards, chalk, or books) alone has no measurable impact on either access or learning outcomes unless complemented by other interventions that more directly influence school participation or pedagogical practices.²²

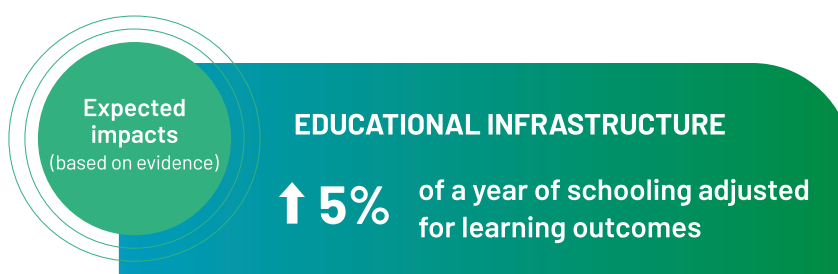
CAF has also supported initiatives to extend school hours in Brazil, Argentina, and Uruguay. Research shows that extending learning time can have highly positive effects if the additional time is carefully planned with appropriate activities for students. For instance, an evaluation of the Escolas de Tempo Integral (ETI)^f program in Brazil, funded by CAF, revealed significant outcomes: students in these schools advanced to the next grade more frequently (by +9 to +16 percentage points); were more likely to complete lower secondary education (by +11

^f Program for extended school hours implemented in Fortaleza, Brazil, in 2014.

The Escolas de Tempo Integral (ETI) program supported by CAF in Brazil has demonstrated improvements in school progression, higher likelihood of completing lower secondary education, and better performance in mathematics.

percentage points); and achieved higher scores on standardized math tests (+0.22 standard deviations).²³ These results are likely attributable to efforts to adapt the curriculum to the extended school hours.

Using Learning-Adjusted Years of Schooling (LAYS)^g as a metric—an indicator that measures the impact of educational interventions in terms of quality-adjusted learning years—CAF-funded infrastructure projects are estimated to improve learning outcomes in beneficiary areas by the equivalent of 5% of one high-quality academic year. The impacts are expected to be greater in remote areas or in educational contexts with limited resources. In contrast, the isolated provision of educational materials (e.g., books or libraries) is not anticipated to increase LAYS.²⁴



While evidence suggests that school infrastructure can be valuable for improving access and strengthening educational processes, there is broad consensus that increasing access and enhancing educational spaces alone is not enough.¹⁹ Ensuring regular attendance and progression throughout the educational system is essential, as learning cannot occur without the consistent presence of students and teachers throughout the school cycle.

Equally important is what happens inside the classroom—factors such as teaching practices and the classroom environment significantly influence both the quality and quantity of students' learning. In light of this evidence, most of CAF's infrastructure interventions have been paired with complementary measures aimed at strengthening learning outcomes.

^g Learning-Adjusted Years of Schooling (LAYS) quantify education by combining years of schooling with a measure of learning quality, such as standardized test scores. The premise is that one year of education does not yield the same level of learning across all contexts. For example, if country X has an average of 11 years of schooling but only nine LAYS, it means that, given the quality of education in X, each year of schooling generates a level of learning that is below the desired standard (Filmer et al., 2018).



Of the 18 credit operations, the focus has been on:



60% on purchasing educational equipment (including technology supply)



39% on teacher training



39% on strengthening both academic and institutional management

Infrastructure for early childhood education

One of the main shortcomings of education systems in the region is the limited availability of early childhood education, which includes early childhood development and preschool services. To address this, 11 of CAF's approved operations have supported the construction or improvement of infrastructure in at least 386 educational centers across Argentina, Brazil, Colombia, Panama, and Uruguay.



CAF'S ACTIONS IN THE LAST 10 YEARS (2014–2024)

11

infrastructure operations for early education

5 countries supported

Argentina, Brazil, Colombia, Panama, and Uruguay

386 educational centers benefited

Expanding infrastructure for early childhood education has the potential to increase enrollment. When combined with the provision of early stimulation, development, and educational services, these efforts can lead to improved educational outcomes, provided that services are delivered with high-quality standards.

The impact of these interventions on enrollment is estimated to be greater at the early childhood education level than at the primary or secondary levels. For example, a study in Argentina found that kindergarten enrollment increased by 7.5 percentage points (17.5%) due to a kindergarten construction program.²⁵

In terms of educational outcomes, the provision of early stimulation, development, and educational services, combined with CAF's support, has positive impacts only when these services are delivered to high-quality standards. Otherwise, evidence suggests no impact or, in some cases, even negative results. High-quality early childhood education services have the potential to improve academic performance, enhance

social skills, and reduce the incidence of behavioral or socio-emotional issues.²⁶ The estimated impact of CAF's interventions in early childhood education is equivalent to approximately 0.2 learning-adjusted years of schooling.^h

Expected impacts
(based on evidence)

EARLY EDUCATION

↑ 20% of a year of schooling adjusted for learning outcomes

Teacher training



The average numeracy and reading skills of teachers in LAC are low. Nearly half of teachers rank in the two lowest levels on the Programme for the International Assessment of Adult Competencies (PIAAC) scale, and nearly 90% fall into the lowest category for technological skills.²⁷

To strengthen teacher skills in the region, CAF has approved 12 operations since 2013 across six countries: Argentina, Brazil, Colombia, Ecuador, El Salvador, and Panama. These initiatives have benefited at least 135,000 teachers and school administrators.

CAF'S ACTIONS IN THE LAST 10 YEARS (2014–2024)

12
teacher training operations

6 countries supported
Argentina, Brazil, Colombia, Ecuador, El Salvador, and Panama

135,000 teachers and school administrators benefited

^h Based on the median of studies analyzed by [Angrist et al. \(2023\)](#).

» 5 operations have included interventions to improve teaching pedagogy, focusing on language instruction, special education, and the integration of technology into teaching practices.

» 2 operations have supported continuing education programs, while two others have targeted initial teacher training and postgraduate programs. These efforts have led to the creation of teacher training centers, new training programs, and the implementation of online learning platforms.

» 1 operation has focused on teacher training in English, addressing both pedagogical practices and teachers' substantive knowledge of the language.

» 2 operations included actions to improve teachers' digital literacy and their skills in using technology within the teaching process.

Teacher training programs vary widely in content, teaching methodologies, delivery methods, duration, design, and the profiles of the target educators. Consequently, evidence on their effectiveness is also inconsistent.



General teacher training programs, such as those typically included in continuing education initiatives, show positive impacts, though these are generally small in magnitude.²⁸ Using the previously mentioned metric (Learning-Adjusted Years of Schooling, or LAYS), CAF's support for continuing education programs could increase adjusted schooling in the targeted areas by an average of 0.04 LAYS.

Teacher training programs focused on pedagogy, though highly varied, have shown positive effects on several educational outcomes, including student performance in mathematics and language exams, dropout rates, student attendance, grade completion, and teacher attendance.²⁹ CAF's support for improving pedagogical practices is estimated to result in a 1% to 2% increase in language and mathematics performance³⁰, equivalent to approximately 0.32 LAYS.



Regarding teacher preparation programs, such as undergraduate programs, rigorous evidence is limited. However, certain elements can improve their effectiveness: integrating practical components into training curricula, incorporating innovations across various knowledge areas, and implementing selective admissions standards to ensure high skill levels among those entering the teaching profession.³¹

Several factors are critical to ensuring the effectiveness of teacher training programs. First, programs with favorable outcomes are those linked to specific areas of knowledge or skills.³² In this regard, the most effective training focuses on pedagogical development. Second, training programs are more effective when they provide teachers with ample opportunities for hands-on practice during the learning process.³¹ Third, it is essential to offer detailed, tailored support to teachers based on their skill levels, including specific guidance on lesson planning and, whenever possible, post-training mentorship.³³ Lastly, training programs should be adapted to teachers' experience levels³⁴ and linked to career advancement opportunities.³¹

Digital transformation in educational institutions

In LAC, technological equipment deficits hinder the development of digital skills. On average, there is only one computer for every two students, and 58% of school principals consider the lack of digital resources a barrier to the proper functioning of their institutions.³⁵



For this reason, since 2013, CAF has approved 13 credit and technical cooperation operations to promote access to and use of technology in educational practices across 9 countries: Argentina, Bolivia, Brazil, Colombia, Ecuador, El Salvador, Panama, Trinidad and Tobago, and Venezuela.



CAF'S ACTIONS IN THE LAST 10 YEARS (2014–2024)

13

credit and technical cooperation operations

9 countries supported

Argentina, Bolivia, Brazil, Colombia, Ecuador, El Salvador, Panama, Trinidad and Tobago, and Venezuela



The impact of providing technology on learning outcomes is positive when accompanied by guidance on using the equipment or specific learning programs aligned with curricular content.

» 2 operations focused on improving connectivity in educational institutions.

» 8 operations funded the provision of computers, tablets, or other audiovisual and communication equipment for schools, teachers, and students. In some cases, these resources were also used for educational management activities.

» 7 operations aimed to directly strengthen the digital skills of teachers, administrators, and students.

» 10 CAF-supported interventions included the implementation or enhancement of educational platforms or other digital resources to expand learning spaces, facilitate assessments, and improve communication among educational stakeholders. Furthermore, some of these operations emphasized strengthening teachers' skills and competencies to integrate technology into their pedagogical activities.

Evidence on the impact of increasing access to technology without modifying teaching and learning processes is mixed, with studies showing positive, negative, and negligible effects. While expanding access to technology alone is insufficient to improve educational outcomes, it can lay the groundwork for more ICT-based interventions.

In line with CAF's efforts to complement the provision of equipment with actions such as teacher and student training, evidence shows that the impact of providing technology on learning outcomes is positive when accompanied by guidance on using devices or learning programs specifically aligned with curricular content.

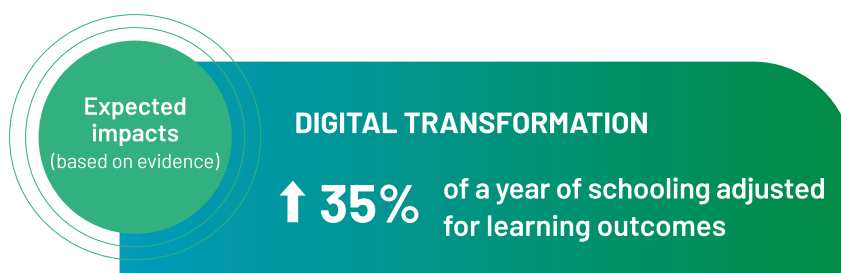
For example, an evaluation of a program in Peru that expanded internet access in schools found that positive academic

outcomes only emerged after the intervention was supplemented by hiring specialized technology teachers.³⁶ Similarly, there is positive evidence for remote learning technologies, including teacher training.



Educational technology interventions, like those financed by CAF, could improve academic performance by approximately 2%, equivalent to 0.35 learning-adjusted years of schooling.ⁱ

The literature suggests that technology's potential to enhance learning is greater when the necessary infrastructure (internet, devices, and electricity) is in place, the technology adapts to student performance, complements classroom content, and teachers receive sufficient training for its integration.³⁷



Strengthening educational management

CAF has approved nine operations in Argentina, Bolivia, Colombia, the Dominican Republic, Ecuador, Panama, and Uruguay aimed at strengthening the management of educational institutions. These initiatives directly support specific areas of administration, promote the use of technology and data in management processes, monitor learning outcomes, and establish structures to provide targeted support for teachers.

ⁱ Based on the median impacts analyzed by [Rodríguez-Segura \(2022\)](#).



CAF'S ACTIONS IN THE LAST 10 YEARS (2014–2024)

9 operations

to strengthen educational management

7 countries supported

Argentina, Bolivia, Colombia, the Dominican Republic, Ecuador, Panama, and Uruguay

School principals play a key role in the pedagogical process, as they are responsible for managing educational resources to ensure fundamental teaching and learning conditions and keeping all stakeholders aligned with the primary goal: strengthening learning outcomes.

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The impact of interventions in educational management is consistently positive, despite the limited availability of studies and the high variability of interventions. According to the literature, the most effective programs are those that:

1. Include structured classroom observation components and provide high-quality feedback to teachers, including coaching;
2. Promote the use of student performance data at the school level;
3. Decentralize decision-making to the school level; and
4. Enhance the capacity to set and achieve objectives.³⁸

Learning a second language

CAF has supported second-language instruction through a credit operation in Panama, emphasizing English education across the school system. In the medium term, this initiative could improve children's academic performance and enhance cognitive abilities, such as memory and problem-solving skills.³⁹



Teaching a second language can translate into better academic outcomes for children and stronger cognitive abilities, including those related to memory and problem-solving.

Moreover, studies indicate that proficiency in a second language is not only critical for workforce integration but also has the potential to boost earnings.⁴⁰ Research from various LAC countries shows that employers highly value second-language skills during recruitment and often struggle to find candidates with these qualifications.⁴¹

Strengthening socio-emotional skills

CAF has approved 5 credit and technical cooperation operations to strengthen socio-emotional skills among both teachers and students. In some cases, these interventions take place directly in school settings, while in others, they are implemented in extracurricular contexts through activities such as music and sports. CAF has also supported initiatives focusing on early childhood care and stimulation in this area.⁴²

There is extensive evidence highlighting the importance of socio-emotional skills across various dimensions of life.¹⁰ In schools, universal programs to strengthen these skills can improve academic performance by approximately 2%, in addition to having a positive impact on general socio-emotional abilities.⁴³

However, the effectiveness of such interventions depends on the specific program design and its implementation. Globally, there are countless initiatives aimed at enhancing socio-emotional skills, but many have shown little to no impact.⁴⁴ Programs that effectively improve social and emotional dimensions, as well as academic, professional, or health-related outcomes, are those specifically designed to develop socio-emotional skills.

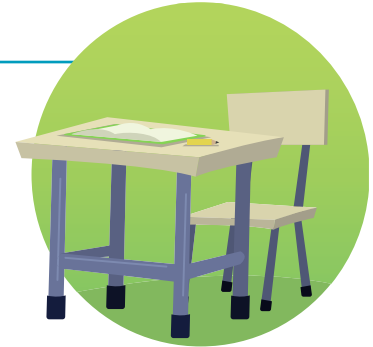
CAF's contributions to evaluating the [impact](#) of football on socio-emotional skills are particularly noteworthy. In 2017, Peru conducted what is likely the first experimental evaluation in this field, followed by a similar study in Colombia. CAF's support in analyzing these program implementations has identified three factors that may limit their benefits for children: low attendance rates at football practices, challenges in designing sports activities, and short participation durations in the programs.



Preventing school dropout

ARGENTINA

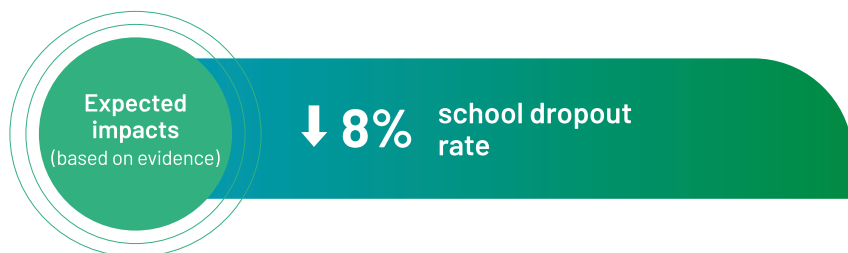
In Argentina, CAF has supported three interventions aimed at preventing dropout in secondary education. One credit operation in Jujuy included technological infrastructure and childcare facilities for the babies of teenage mothers, alongside pedagogical and scheduling adjustments to increase school retention, continuity, and completion rates. Additionally, technical cooperation programs in Córdoba, La Pampa, and [Mendoza](#) piloted early warning systems to prevent dropout.



According to evidence, prevention programs can reduce school dropout by approximately 8%.⁴⁵

GUATEMALA

Regarding early warning systems, an evaluation in Guatemala⁴⁶ showed that dropout rates among high-risk students can be reduced by 8%, as demonstrated by the system supported by CAF. The potential impact of such systems is greater when accompanied by robust support for students, both at the school and community levels.⁴⁷



In summary

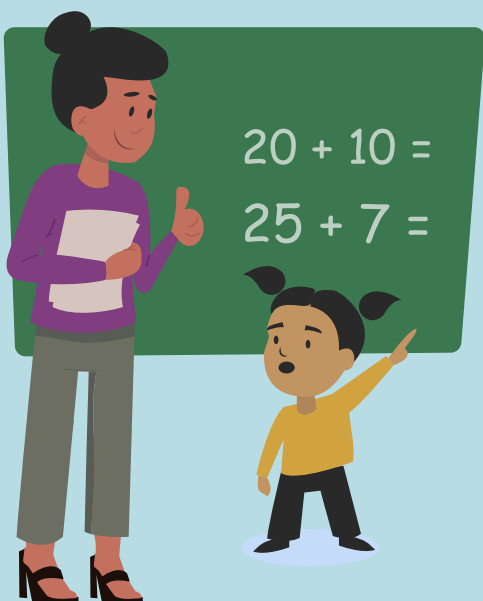
In the last ten years, CAF has approved USD 1.31 billion in loans and technical cooperation to strengthen basic education systems in LAC. CAF has also supported countries through various knowledge products designed to assist decision-making in education policy.

Available evidence suggests that CAF's support for improving educational infrastructure has increased access to education and enhanced academic performance, particularly in remote areas and regions with inadequate infrastructure. For example, CAF's backing of full-time integral schools in Brazil has significantly improved grade progression and mathematics performance. Newly built or renovated infrastructure financed by CAF has been shown to increase learning-adjusted years of schooling (LAYS) by approximately 5%.

Likewise, CAF's investments in expanding early childhood education have been linked to a positive impact on academic performance, as well as behavioral and socio-emotional outcomes. When implemented with high-quality standards, these interventions have the potential to increase LAYS by as much as 20%.

CAF's efforts to strengthen teacher training in pedagogical practices have the potential to increase LAYS by 32%. In the area of digital transformation, combining the provision of equipment and connectivity with strategies to integrate technology into teaching processes has been found to increase LAYS by 35%.

Evidence also indicates that enhancing school systems' capacity to use student data improves decision-making, particularly in areas like dropout prevention. Furthermore, strengthening second-language instruction is expected to enhance students' cognitive skills and, in the long term, improve their employment prospects.



Reference notes

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- 2 [Hanushek & Woessmann \(2012\)](#)
- 3 [World Bank \(2018\)](#); [Berniell et al. \(2016\)](#); [Montenegro & Patrinos \(2014\)](#) and [de Hoyos et al. \(2021\)](#)
- 4 [World Bank \(2018\)](#)
- 5 [Abramsky et al. \(2011\)](#) and [Le & Nguyen \(2021\)](#)
- 6 [World Bank \(2018\)](#) and [Égert et al. \(2022\)](#)
- 7 [Balart et al. \(2015\)](#)
- 8 [Berniell et al. \(2016\)](#) and [World Bank \(2018\)](#)
- 9 [UNESCO \(2022\)](#)
- 10 [Berniell et al. \(2016\)](#)
- 11 [Berniell et al. \(2023\)](#)
- 12 [UNESCO \(2021\)](#)
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- 14 [OECD \(2023\)](#)
- 15 [Arias Ortiz et al. \(2024\)](#)
- 16 [Llambí et al. \(2023\)](#)
- 17 [OECD \(2020\)](#)
- 18 [Snilstveit et al. \(2015\)](#); [Conn \(2017\)](#); [Jie & IDinsight \(2021\)](#); [Akyeampong et al. \(2023\)](#); [Angrist et al. \(2023\)](#) and [Glewwe & Muralidharan \(2016\)](#)
- 19 [Snilstveit et al. \(2015\)](#)
- 20 [Glewwe & Muralidharan \(2016\)](#)
- 21 [Cuesta et al. \(2016\)](#) and [Moore et al. \(2020\)](#)
- 22 [Glewwe et al. \(2011\)](#); [Cuesta et al. \(2016\)](#) and [Snilstveit et al. \(2015\)](#)
- 23 [Estrada et al. \(2022\)](#)
- 24 [Angrist et al. \(2023\)](#)
- 25 [Berlinsky & Galiani \(2007\)](#)
- 26 [Suchodoletz et al. \(2023\)](#)
- 27 [Estrada & Lombardi \(2020\)](#)
- 28 [Angrist et al. \(2023\)](#); [Snilstveit et al. \(2015\)](#); [Ganimian & Murnane \(2016\)](#) and [Filges et al. \(2019\)](#)
- 29 [Akyeampong et al. \(2023\)](#); [McEwan \(2015\)](#); [Snilstveit et al. \(2015\)](#); [Conn \(2016\)](#); [Kraft et al. \(2018\)](#); [Evans \(2016\)](#); [Stockard et al. \(2018\)](#); [Béteille & Evans \(2021\)](#); [Angrist et al. \(2023\)](#); [Podolsky et al. \(2019\)](#); [Fryer \(2017\)](#) and [Ganimian & Murnane \(2016\)](#)
- 30 [Conn \(2016\)](#) and [Kraft et al. \(2018\)](#)
- 31 [Béteille & Evans \(2021\)](#)
- 32 [Akyeampong et al. \(2023\)](#); [Evans \(2016\)](#); [Kraft et al. \(2018\)](#); [Fryer \(2017\)](#) and [Popova et al. \(2022\)](#)
- 33 [Akyeampong et al. \(2023\)](#); [Ganimian & Murnane \(2016\)](#); [Evans \(2016\)](#); [Stockard et al. \(2018\)](#) and [Béteille & Evans \(2021\)](#)
- 34 [Popova et al. \(2022\)](#)
- 35 [Arias Ortiz et al. \(2024\)](#)
- 36 [Kho et al. \(2023\)](#)
- 37 [Kaye & Ehren \(2021\)](#); [Akyeampong et al. \(2023\)](#); [Rodríguez-Segura \(2022\)](#); [Major et al. \(2021\)](#); [Snilstveit et al. \(2015\)](#) and [Ganimian & Murnane \(2016\)](#)
- 38 [Grissom et al. \(2021\)](#); [Conn \(2016\)](#) and [Hitt & Tucker \(2016\)](#)
- 39 [Woll & Wei \(2019\)](#) and [O'Brien et al. \(2017\)](#)
- 40 [Ginsburgh & Prieto-Rodríguez \(2011\)](#) and [Liwiński \(2019\)](#)
- 41 [Cronquist & Fiszbein \(2017\)](#)
- 42 [ImpactoCAF - Early childhood care for greater well-being](#)
- 43 [Durlak et al. \(2023\)](#)
- 44 [Deitz et al. \(2021\)](#)
- 45 [Wilson et al. \(2011\)](#)
- 46 [Haimovich et al. \(2021\)](#)
- 47 [UNICEF \(2018\)](#)

Appendix: Published Knowledge Products



Educational infrastructure

- [Cinco casos exitosos de planificación y diseño de proyectos de infraestructura educativa](#)
- [Guía para el diseño de las infraestructuras educativas desde una perspectiva de género interseccional y sostenibilidad ambiental](#)
- [Guías de formulación y diseño para proyectos de infraestructura educativa](#)
- [Guía de gestión en infraestructura para escuelas seguras en el contexto del Marco Integral de Seguridad Escolar](#)



Teacher training and strengthening educational management

- [Experiencias innovadoras en el desarrollo profesional de directivos](#)
- [Políticas exitosas de desarrollo profesional docente en América Latina y el Caribe 2005-2016](#)
- [Resultados de la primera convocatoria sobre innovaciones prometedoras en formación docente](#)
- [Existe poca evidencia acerca de la efectividad del desarrollo profesional continuo \(DPC\)](#)
- [Skills and selection into teaching: Evidence from Latin America](#)
- [La efectividad de los incentivos monetarios para modificar las decisiones de localización de los docentes \(resumen pp\)](#)
- [Impulso de la formación docente mediante el otorgamiento de becas \(resumen pp\)](#)
- [Rules vs. Discretion in Public Service: Teacher Hiring in Mexico](#)
- [Las cualificaciones docentes más altas se asocian a una educación y atención preescolar de mayor calidad](#)



Digital transformation, technology provision, and pedagogical guidance

- [Aprendizajes y desafíos para la enseñanza de las Ciencias de la Computación en las escuelas. \(caf.com\)](#)
- [Transformación digital en la educación: el caso de la provincia de Jujuy, Argentina](#)
- [La enseñanza adaptativa y la individualización para estudiantes de kínder a secundaria \(K-12\) mejoran el rendimiento académico](#)
- [Transformación digital en las Administraciones Públicas Educativas en Iberoamérica: análisis y perspectivas](#)
- [Herramienta diagnóstico sobre la incorporación de la tecnología en los sistemas educativos \(caf.com\)](#)
- [Hojas de ruta para la incorporación de la tecnología en los sistemas educativos \(caf.com\)](#)
- [Roadmaps for the incorporation of technology in education systems](#)
- [Diagnostic tool for incorporating technology in education systems](#)
- [Ferramenta de diagnóstico sobre a incorporaçãõ de tecnologia em sistemas educacionais](#)
- [Roteiros para a incorporaçãõ de tecnologia nos sistemas educacionais](#)
- [Hacia una agenda integral de la adopción de tecnologías para el aprendizaje 4.0 en América Latina \(caf.com\)](#)
- [Modelos alternativos de conectividad para escuelas de difícil acceso](#)
- [Uso estratégico de datos e inteligencia artificial en la educación Policy brief 5](#)
- [Inteligencia artificial en el sector de la educación. Informe 5](#)
- [Oportunidades de innovación pedagógica con asistencia de Inteligencia Artificial](#)
- [Buenas prácticas internacionales en la capacitación de fuerza de trabajo digital: hoja de ruta para América Latina y el Caribe \(caf.com\)](#)
- [Diagnóstico de necesidades actuales y futuras de trabajadores para el sector de tecnologías digitales en Panamá \(caf.com\)](#)
- [Análisis de la oferta académica existente para el desarrollo de habilidades en tecnologías 4.0 en Panamá \(caf.com\)](#)



Socio-emotional skills, second-language learning, and others

- [Políticas públicas de enseñanza de lenguas extranjeras](#)
- [Las intervenciones escolares focalizadas mejoran el rendimiento en lectura y matemáticas de estudiantes de secundaria en situación de riesgo](#)
- [Las Competencias Transversales y Socioemocionales en los Marcos de Cualificaciones. Oportunidades para su identificación, medición y fortalecimiento](#)
- [Formación de educadores para el desarrollo de las competencias transversales y socioemocionales](#)
- [Evaluación de habilidades socioemocionales y transversales: un estado del arte](#)
- [Articulación intersectorial y plan de acción de programas de Competencias Transversales y Socioemocionales](#)
- [Acompañamiento psicosocial individual, familiar y comunitario](#)
- [RED 2016. Más habilidades para el trabajo y la vida: los aportes de la familia, la escuela, el entorno y el mundo laboral](#)
- [RED 2016. More Skills for Work and Life: The contributions of Families, Schools, Jobs, and the Social Environment](#)
- [El desafío del desarrollo de habilidades en América Latina. Un diagnóstico de los problemas y soluciones de política pública](#)
- [SOMOS muchos, seamos más \(futbol para el desarrollo\)](#)
- [Modelo de formación para la ciudadanía en Colombia](#)
- [Cursos gratuitos en línea: incentivos para aumentar aprobación y medición de impacto en conocimiento](#)
- [Música para crecer, una iniciativa de CAF. Juntos transformamos vidas](#)
- [Habilidades no cognitivas en América Latina. Una medición desde pruebas estandarizadas.](#)
- [Understanding the Math Gender Gap in Latin American Countries](#)
- [The Effect of Schooling on Skills and Knowledge in Latin America. Evidence from PISA](#)
- [Peer Effects in the Development of Capabilities in Adolescence](#)
- [En busca de lo inobservable: incorporando habilidades en un modelo a la Mincer](#)
- [Las intervenciones escolares focalizadas mejoran rendimiento en lectura y matemáticas de alumnos en riesgo en los cursos K-6 \(revisión\)](#)
- [La instrucción de la comprensión lingüística tiene un efecto leve sobre la comprensión generalizada del lenguaje y un efecto insignificante sobre la comprensión lectora](#)

- [La educación de un solo ciclo durante todo el año mejora modestamente el promedio de matemáticas y la comprensión lectora de los estudiantes de kínder a secundaria \(K-12\)](#)
- [Las habilidades lingüísticas preescolares se asocian con una mejor comprensión lectora en la escuela](#)
- [El currículo de “Herramientas de la Mente” mejora la autorregulación y habilidades académicas en la infancia](#)



Preventing school dropout

- [Alertas tempranas para prevenir el abandono escolar: el caso de la provincia de Mendoza](#)
- [Políticas para promover la culminación de la educación media en América Latina y el Caribe. Lecciones desde México y Chile](#)
- [Promoting secondary school retention in Latin America and the Caribbean](#)
- [El Fenómeno de los NiNis en América Latina](#)
- [Efectos de las intervenciones psicosociales dirigidas al rechazo a ir a la escuela de estudiantes de primaria y secundaria](#)
- [Tripping at the Finish Line Experimental Evidence on the Road of Misperceptions on Secondary School Completion](#)
- [No existe evidencia suficiente para saber si las escuelas secundarias de recuperación y las comunidades universitarias de recuperación son efectivas](#)
- [Los programas de ausentismo escolar aumentan la asistencia, pero se necesitan mejores programas y evidencia](#)
- [Algunas intervenciones para reducir la exclusión escolar funcionan, pero su efecto es temporal](#)



Other knowledge products:

Extending the school day

- [What a difference a full day makes: Evidence from new schools in Fortaleza](#)
- [Evidencia sobre el impacto de escuelas de tiempo completo \(resumen pp\)](#)
- [¿Cómo fortalecer los modelos de extensión de la jornada escolar? Revisión de experiencias y aplicación al caso de Uruguay](#)

Impact of COVID-19 on education

- [Nueva normalidad y formación profesional. Aportes desde la experiencia de cuatro instituciones de formación](#)
- [Políticas para reducir las brechas educativas en la pospandemia](#)

Educational and social mobility

- [Desigualdades heredadas. El rol de las habilidades, el empleo y la riqueza en las oportunidades de las nuevas generaciones](#)
- [Retos de la política social en América Latina y el Caribe: análisis y políticas](#)
- [La movilidad educativa intergeneracional en el siglo XX en América Latina y el Caribe](#)

Impact evaluations

- [Evaluación de Impacto del Modelo de Servicio Educativo para Estudiantes de Alto Desempeño implementado a través de los Colegios de Alto Rendimiento \(COAR\)](#)
- [Impacto de colegios de alto rendimiento en Perú](#)
- [Programa Primer Paso \(pasantías\): evaluación de impacto](#)
- [Learning About Opportunity: Spillovers of Elite School Admissions in Peru](#)