

Towards Gender Equality: The Impact of Education and Training on Women's Educational Outcomes and Empowerment in Low-Income Contexts



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Date January 2025

Working Paper 2025-02

PEP Working Paper Series

ISSN 2111-7331

Abstract

Women can improve their socioeconomic status, enhance their agency, and increase their bargaining power in household decision-making, including regarding fertility choices and financial matters, by gaining knowledge, skills, and information. This systematic literature review applies a gender lens to analyse educational interventions and training programs that have promoted women's empowerment and gender equality in low-income and lower-middle-income countries. We used an electronic database to generate an initial pool of 5,560 articles and whittled that selection down to 39 papers that were published in high-impact economics journals and employed causal identification methodologies. Afterwards, we manually added 18 relevant studies to arrive at a total of 57 reviewed articles. This review considers interventions with proven impacts, from school feeding programs and health initiatives to vocational training and childcare support initiatives. Our findings indicate that these development programs can significantly boost women's and girls' enrolment in education, employment, and economic autonomy while addressing barriers like social norms and mobility constraints. Key outcomes include increased employment and income, improved health practices, delayed marriage, and fewer early pregnancies. However, the fact that the findings are mixed for certain types of interventions, such as those that included men in women-focused programs, underscores the need for context-sensitive strategies to effectively address structural gender inequalities.

Acknowledgements

This work was conducted with financial and scientific support from the Partnership for Economic Policy (PEP) and funding provided by Global Affairs Canada (GAC). The authors want to thank Jorge Elías Dávalos Chacón and an anonymous referee for their valuable advice. The views and opinions expressed in this paper are those of the authors and do not necessarily reflect those of PEP.

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I. Introduction

This systematic literature review focuses on educational interventions that promoted women's empowerment and gender equality⁴ in lower-middle-income and low-income countries. By doing so, it complements and updates the foundational reviews by Duflo (2012) and Buvinić and Furst-Nichols (2016). Duflo (2012) explored the interrelationship that exists between economic development and women's empowerment, in which each can promote the other, and concluded that it seems too weak to be self-sustaining and that continuous policy efforts aimed at empowering women may be necessary to achieve lasting gender equality. Buvinić and Furst-Nichols (2016) reviewed evaluations of interventions that sought to empower women economically and concluded that similar interventions can have significantly different outcomes depending on their context and the characteristics of the women targeted. They determined that many of the constraints women face can be overcome by simply adjusting the program design. Our review builds on these contributions and adopts a gender lens approach that considers gender equality as an intrinsic goal and incorporates more recent evidence, with a focus on causal studies that link educational interventions to gender-specific outcomes in various life stages.

The 'returns to education' concept in economic theory indicates that attending school can increase one's job prospects and earnings by improving one's skills and productivity while also creating signalling and screening effects in the labour market. This was illustrated in Duflo's (2010) study, which found that a school construction program in Indonesia led to significant increases in educational attainment and wages. Education can therefore shift the gender balance between paid and unpaid work by facilitating women's entry into formal employment and thereby challenging traditional gender roles linked to the unpaid non-market production of goods and services.⁵ Moreover, women can boost their autonomy and bargaining power in household decision-making, including regarding fertility choices and

⁴ Clarification on the use of the terms 'women's empowerment' and 'gender equality' in this review: 'Women's empowerment' refers to the process of increasing women's agency and control over their own lives, and their decision-making in various domains, such as the economic, social, and political spheres. 'Gender equality' is referred to as the state where individuals of all genders have the same rights, responsibilities, and opportunities, and ensuring that societal norms and structures do not create barriers to equal participation, and no one is disadvantaged or discriminated against based on gender (Kabeer, 1999).

⁵ The 'unpaid non-market production of goods and services' refers to activities such as domestic work, caregiving, and subsistence farming, which contribute to the economy but are not compensated through formal wages. These activities are typically performed within the household and are not counted as part of the formal labour market.

financial matters, by gaining knowledge, skills, and information. This increased agency enables women to engage in family planning and pursue personal and career goals before starting a family. Education may also shift women's preferences by exposing them to different lifestyles, possibilities, and values, and lead to changes in life choices such as childbearing, marriage and labour market participation. Furthermore, education can enhance health literacy, which can prompt better healthcare practices during critical life stages and promote healthier behaviours within families and, in turn, improve nutrition and reduce mortality rates.

The fact that education can contribute to gender equality through different channels underscores its potential as a transformative policy objective. Nevertheless, the mere provision of educational opportunities may be insufficient to fully realize this potential, particularly in the face of rigid social norms and non-tuition barriers⁶ that inhibit women's educational participation. Therefore, a comprehensive policy approach that integrates educational initiatives with broader strategies is essential to effectively address these challenges. The main goal of this review is to equip researchers, policymakers, and practitioners with evidence-based insights into effective policies and programs that have helped to reduce gender disparities in developing countries. To focus on the relationships that can best guide decision-making, this review looks at studies that employ causal quantitative methods. We report on 57 economics studies, 39 of which were identified using our original query and inclusion and exclusion criteria defined for the systematic component of our review.⁷ Including this systematic component ensures an unbiased synthesis of existing research, as it applies structured, transparent, and replicable study selection and evaluation criteria to reduce the risk of selective reporting and enhance the reliability of conclusions. The inclusion and exclusion criteria used encompass the date of publication, the categorisation of the journal within the broader field of economics, impact factor thresholds, and the classification of the country of implementation. We complemented the systematic component of our review with eighteen additional studies, most of which are seminal papers that were not captured by our query for a variety of reasons, that we added manually to support our

⁶ 'Non-tuition barriers' are obstacles to education that extend beyond tuition fees, such as the cost of school supplies and uniforms, transportation costs and availability, safety concerns, and household responsibilities.

⁷ All thirty-nine papers that were identified as part of the systematic component of our review evaluated their interventions of interest using a causal identification methodology. The same cannot be said for the eighteen papers that were manually added, as some of them used other methods such as reviewing previous studies.

discussion on specific topics. Our inclusion and exclusion criteria are detailed in the Methodology section.

While this review focuses on studies that investigated programs targeting women, it also incorporates studies that evaluated initiatives that were not specifically designed for women but demonstrated significant gender-differentiated effects. Additionally, some interventions aimed at women did not yield the expected outcomes, or even resulted in opposite effects, due to a range of contextual and structural barriers. These barriers include rigid social norms, inadequate complementary infrastructure, gendered power dynamics, and the influence of traditional gender roles, which limited the effectiveness of interventions despite the resources provided. This underscores the importance of carefully considering gender as a critical factor in the design and assessment of interventions while acknowledging that these—and other—barriers exist and how policies and programs interact with the different constraints men and women face. By examining both interventions with targeted outcomes and those with gender-differentiated outcomes, this review emphasizes that promoting gender equality in different contexts is a complex endeavour and requires more than a direct comparison of the outcomes for men and women.⁸

Overall, the review looks at studies that investigated interventions that we broadly categorised into two main categories: (1) those that aimed to improve women's educational outcomes, and (2) those that assessed how improvements in education contributed to broader gender equality outcomes. For each category, we highlight the connections between the interventions and their outcomes, particularly focusing on their impact on women.

In the first category, key findings underscore the effectiveness of school feeding programs (SFPs) in boosting enrolment and academic performance, with a pronounced positive effect on girls, thereby reducing the gender gap in educational outcomes. Our analysis reveals that health interventions, such as disease control campaigns, play a crucial role in narrowing gender and socioeconomic gaps in academic achievement. In addition, it highlights the transformative potential of role models and peer influence in education and demonstrates how exposure to successful female figures and the presence of female peers can inspire girls,

⁸ See Heintz (2014) for a discussion on the importance of acknowledging structural inequalities and integrating a gender perspective in research.

raise their aspirations, encourage different career choices, and significantly enhance educational engagement and achievement. Finally, it determines that non-tuition barriers must be addressed to facilitate school attendance and participation, especially in underprivileged contexts, and shows that overcoming these barriers can also reduce early pregnancy rates and delay marriage through sustained educational engagement.

In the second category, our review explores the impact increased educational attainment has on women and girls and illustrates how education empowers women and girls to make informed decisions that affect their personal and professional lives. This leads to lower fertility rates, delayed marriage and childbearing, improved health practices, and greater awareness of social and political issues. Moreover, our review highlights the effectiveness of vocational skills and business training programs as well as childcare provision in enhancing employment opportunities for women, increasing their earning potential, and empowering them economically. It emphasizes the importance of designing these programs to address the unique challenges faced by women, thereby enhancing their relevance and impact. Finally, it examines additional educational interventions that do not fit in the other subcategories defined but reveal the complexities of program implementation due to persistent challenges posed by entrenched gender norms and societal barriers. These challenges can sometimes limit the impact of programs or even result in interventions unintendedly reinforcing existing gender gaps. These studies highlight the need for context-sensitive, carefully designed interventions that account for broader societal dynamics.

In conclusion, this systematic literature review advocates for strategic investment and continuous research to optimize the effectiveness and efficiency of educational interventions and training programs in promoting women's empowerment and gender equality in lower-middle-income and low-income contexts. This requires a nuanced understanding of the local context and the specific needs and constraints of women and girls beyond effective education provision to ensure that the interventions not only address immediate educational or economic deficits but also foster structural societal change.

This report is structured as follows: Section 2 presents the methodology followed for the systematic literature review, including the inclusion and exclusion criteria used, and each step of the process. Section 3 describes the characteristics of the sample of studies included in the

systematic component of the review. Section 4 carefully reviews all the studies and their main findings. Finally, Section 5 presents the conclusion.

II. Methodology

This systematic literature review followed the standard methodology stages identified by Petticrew and Roberts (2006) with some adaptations to address its specific objectives and sub-themes. We began by selecting an array of keywords⁹ to use in our Scopus database query (see the Appendix for the complete query and all the variables used). We chose to use Scopus because it can search based on conditional criteria, which ensures extensive coverage of pertinent studies. Our primary aim was to arrive at a comprehensive collection of studies that assess the efficacy of policies promoting gender equality. We then omitted the duplicates to arrive at a set of unique studies for an initial review of their title, publisher, abstract, and keywords. We assessed whether those studies satisfied our predefined inclusion and exclusion criteria based on their title, abstract, and keywords, and omitted those that did not. The remaining studies were subjected to a thorough full-text analysis during which we implemented a more stringent selection process that conformed to the established criteria (see section 2.1 below). This process culminated in the identification of our final sample of thirty-nine papers for review.,

We acknowledge that limiting our review to peer-reviewed, Scopus-indexed journals may introduce publication bias and potentially favour research from higher-income countries or institutions with more resources. However, our review includes a high proportion of studies with contributions from Global South authors, which is indicative of a significant degree of diversity. Nevertheless, valuable insights from grey literature or regional sources may be overlooked, so future research could enhance inclusivity by incorporating non-peer-reviewed

⁹ Keywords spanned demographic identifiers like ‘female’, ‘girl’, ‘woman’, and ‘gender’; intervention types such as ‘program’, ‘policy’, ‘strategy’, and ‘initiative’; education-related terms including ‘teaching’, ‘training’, ‘education’, and ‘vocational’; and outcome-related terms such as ‘empowerment’, ‘equality’, ‘income’, and ‘employment’.

studies and regional publications to better capture the full scope of interventions' impact on gender equality.

2.1 Inclusion and exclusion criteria

Considering that a main goal of this study is to provide evidence-based information about effective policies to promote gender equality in developing countries, we limited the systematic component of this literature review to studies that employed quantitative causal inference methods to evaluate interventions that targeted girls, women, or educators in the context of education in countries classified as low-income or lower-middle-income in the World Bank's latest country classifications by income level.¹⁰ We therefore focused on studies that used at least one of the following research designs: randomized controlled trials (RCTs); non-randomised designs with selection on observables, including difference-in-differences (DID), regression discontinuity design (RDD), and matching designs; and instrumental variables (IVs)-based identification.

This review incorporates exclusively peer-reviewed articles that were published in English between 1999 and 2023. We selected 1999 as the starting year in line with Priya et al.'s (2021) analysis, which evidences that the body of literature on empowerment theory and metrics expanded after Kabeer's seminal work was published in *Development and Change* in 1999. To ensure our review is rigorous and credible, we consider exclusively articles that were published in journals having an impact factor above 9 in the IDEAS/RePEc Simple Impact Factors for Journals ranking. This metric is calculated using the ratio of the number of citations

¹⁰ As at July 2023, the World Bank classified the following nations as lower-middle-income and low-income countries: Afghanistan, Angola, Bangladesh, Benin, Bhutan, Bolivia, Burkina Faso, Burundi, Cambodia, Cameroon, the Central African Republic, Chad, Congo, Cote d'Ivoire, the Democratic Republic of the Congo, Djibouti, Egypt, El Salvador, Eritrea, Ethiopia, Gambia, Ghana, Guatemala, Guinea, Guinea-Bissau, Haiti, Honduras, India, Indonesia, Kenya, Kiribati, the Kyrgyz Republic, Lao PDR, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Micronesia, Moldova, Mongolia, Morocco, Mozambique, Myanmar, Nepal, Nicaragua, Niger, Nigeria, Pakistan, Papua New Guinea, the Philippines, Rwanda, São Tomé and Príncipe, Senegal, Sierra Leone, the Solomon Islands, Somalia, South Sudan, Sri Lanka, Sudan, Swaziland, the Syrian Arab Republic, Tajikistan, Tanzania, Timor-Leste, Togo, Tunisia, Uganda, Ukraine, Uzbekistan, Vanuatu, Vietnam, the West Bank and Gaza, Yemen, Zambia, and Zimbabwe. The classifications were retrieved from the World Bank Country and Lending Groups page, which can be accessed at <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups> (last accessed: January 14, 2024).

to the number of articles in a series, with the number of citations adjusted to exclude citations from the same series. This criterion serves as a measure of the quality of the research that our systematic literature review scrutinizes.¹¹ Additionally, we limit the scope of our review to journals in the subject areas of 'economics, econometrics and finance' and 'business, management and accounting.'

2.2 Sample selection

The search query that we executed in Scopus is detailed in the Appendix and yielded an initial list of 5,560 research articles. Filtering out journals with an IDEAS/RePEc impact factor ranking of less than 9 narrowed our search to the top 251 journals and 676 papers, 193 of which were duplicates. The refined list therefore comprised 483 unique research articles whose titles, keywords, and abstracts were scrutinised to enforce our inclusion and exclusion criteria. This process resulted in sixty-seven articles undergoing a full-text analysis. Subsequent application of our inclusion and exclusion criteria further narrowed the selection to the thirty-nine research articles that constitute the basis of our systematic literature review.

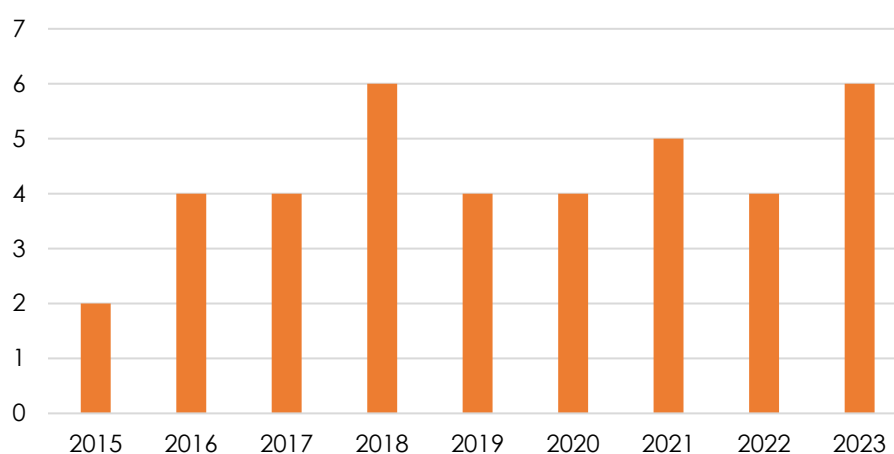
III. Overview of the studies reviewed.

From the pool of articles on educational interventions that promoted women's empowerment and gender equality in lower-middle-income and low-income countries published between 1999 and 2023, our methodology resulted in a complete concentration of papers published after 2015, as all those that passed the selection process were from this period. Between 2015 and 2023, the number of papers published annually ranged from two to six. The lack of papers published from 1999 to 2014 highlights a clear upward trend in

¹¹ The IDEAS/RePEc Simple Impact Factors for Journals ranking that we utilized to select sources for our systematic review was accessed at <https://ideas.repec.org/top/top.journals.simple.html> on January 14, 2024.

research on this topic. Figure 1 below illustrates the distribution of the reviewed papers by their year of publication.

Figure 1 – No. of articles by year of publication



Source: Authors owns figure

The distribution of articles reviewed by journal of publication is shown in Table 1 below. *World Development* was at the forefront with eight articles, or 21% of the sample. The *Journal of African Economies* followed with seven articles (18%). Four journals—the *American Economic Journal: Applied Economics*, the *Economics of Education Review*, the *Journal of Human Resources*, and *Management Science*—accounted for three articles (8%) each. Three journals—the *American Economic Review*, the *Journal of Development Economics* and the *Journal of Human Capital*—provided 2 articles (5%) each, while six journals—the *American Journal of Agricultural Economics*, *Economica*, the *European Economic Review*, *Food Policy*, the *Journal of Population Economics*, and *Labour Economics*—accounted for 1 article (3%) each.

Table 1 – No. and share of articles by journal of publication.

Journal	IDEAS/RePEc Simple Impact Factor	No. of articles	Share (%)
World Development	16.546	8	21%
Journal of African Economies	11.318	7	18%
American Economic Journal: Applied Economics	53.926	3	8%
Economics of Education Review	10.008	3	8%
Journal of Human Resources	31.525	3	8%
Management Science	19.518	3	8%
Journal of Development Economics	33.676	2	5%
American Economic Review	76.333	2	5%

Journal of Human Capital	12.761	2	5%
American Journal of Agricultural Economics	20.686	1	3%
Economica	13.884	1	3%
European Economic Review	27.552	1	3%
Food Policy	9.649	1	3%
Journal of Population Economics	19.962	1	3%
Labour Economics	19.855	1	3%

Source: Authors owns table

The distribution of articles reviewed by country of intervention is shown in Table 2 below. India led the way with nine articles, or 23% of the sample, followed by Kenya with five articles (13%), and Uganda with 4 (10%). Vietnam was next, with three articles (8%). Four countries—Bangladesh, Ghana, Nigeria, and Tanzania—were the subject of two articles (5%) each, which demonstrates a broad interest in studying gender and education in different settings. The remaining ten countries—Bolivia, Burkina Faso, Ethiopia, Malawi, Mali, Mozambique, Pakistan, Rwanda, Senegal, and Gambia—were the subject of one article (3%) each.

Table 2 – No. and share of articles by country of intervention.

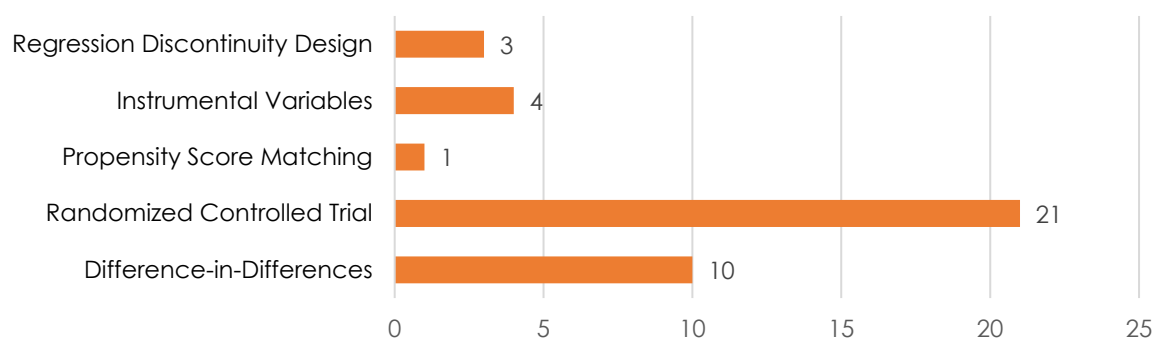
Country	No. of articles	Share (%)
India	9	23%
Kenya	5	13%
Uganda	4	10%
Vietnam	3	8%
Bangladesh	2	5%
Ghana	2	5%
Nigeria	2	5%
Tanzania	2	5%
Bolivia	1	3%
Burkina Faso	1	3%
Ethiopia	1	3%
Malawi	1	3%
Mali	1	3%
Mozambique	1	3%
Pakistan	1	3%
Rwanda	1	3%
Senegal	1	3%
Gambia	1	3%

Source: Authors owns table

The distribution of studies by methodological approach used is shown in Figure 2 and highlights the use of experimental methods, with twenty-one studies utilizing RCTs. This high prevalence underscores this methodology's importance as an identification strategy to evaluate the impact educational interventions had on women's educational attainment and gender equality. The next most popular approach was DID, with ten studies. Instrumental

variable methods were used in four studies, while RDD was applied in three studies. Propensity score matching was notably less common, with only one study utilizing this approach.

Figure 2 – No. of articles by methodological approach used.



Source: Authors owns figure

IV. Analysis of the studies reviewed and their main findings.

For our analysis, we categorised the studies we reviewed into two main categories:

- (i) Those pertaining to interventions aimed at improving women’s educational outcomes – e.g., enrolment rates, attendance, literacy rates, and test scores.
- (ii) Those pertaining to educational interventions focused on broader gender equality outcomes – e.g., increase in labour market participation, income growth, reduction in domestic violence, and changes in fertility choices.

This systematic literature review aims to equip policymakers, educators, and researchers with insights into the effectiveness of various educational interventions in promoting gender equality in lower-income and lower-middle-income countries. Since it is challenging to ensure that a review is exhaustive and captures all relevant knowledge on a given topic while following a rigid methodology, we found we needed to incorporate some additional relevant studies that were not captured by our query, in order to provide a comprehensive review. Including these supplementary papers alongside those identified using our query made it

possible to conduct a more complete analysis of educational strategies that targeted women or exhibited gender-differentiated effects.

We integrated two types of additional papers into our review. The first type relates to sixteen seminal papers that introduced, motivated, and supported the discussion of the topics covered in the subsections and were groundbreaking contributions that have significantly shaped the discipline. The articles of this type are cited in the first paragraph of their corresponding subsection but not included in the table that summarises the papers discussed in the subsection. The second type relates to two papers that complement the findings of papers that were captured by the query. These works are included in the tables and analyses in their corresponding subsections alongside the articles they complement. The articles of this type are denoted with an asterisk after the date of publication. These manually-added papers were not captured by the query for a variety of reasons, such as not including a substantial gender component,¹² being published before 1999, focusing on interventions that took place in countries that were outside of the scope of our methodology (e.g., high-income countries), being unpublished at the time of our systematic search (December 2023), and being published in journals that do not belong to the field of economics.

TECHNICAL NOTE

This technical note aims to help to understand and interpret the quantitative results reported in this review.

Understanding the distinction between 'percentage,' 'percentage point,' and 'percent change' is crucial to accurately interpret and communicate the results of scientific studies, especially in fields such as economics, where slight changes can have significant implications.

- Percentage (or percent) (%): A percentage represents a fraction of one hundred. It is a dimensionless ratio that is used to express the size of one quantity relative to another. The term 'percentage' is used to compare relative changes or proportional differences.
- Percentage point (p.p.): A percentage point quantifies the absolute difference between two percentages. It is a simple arithmetic difference. For example, if an economy's unemployment rate increases from 5% to 6%, the increase is 1 p.p.
- Percent change: A percent change indicates how much something has increased or decreased relative to its previous value. If we return to the previous example,

¹² A substantial proportion of the papers are seminal papers that we include to illustrate important relationships that were observed for both genders, such as between health interventions and school attendance, before we use other papers to show the impacts were significantly different for men and women.

the percent change in the unemployment rate is $\frac{6-5}{5} * 100 = 20\%$.z

4.1 Interventions aimed at improving women's educational outcomes.

We categorised the studies that pertained to interventions aimed at improving women's educational outcomes into different subsections. The papers included evaluate both programs specifically designed for girls and heterogeneous effects by gender for interventions targeting both men and women. The categories are:

- **School feeding programs**, which offer students access to better quality food and, in doing so, potentially boost their attendance and concentration levels while alleviating hunger-induced distractions.
- **Health interventions**, which are dedicated to enhancing student health outcomes with the objective of reducing absenteeism and fostering engagement and improved performance in academic settings.
- **Role model and peer effects**, which are of interest because exposure to successful individuals and interactions with peers can raise students' aspirations and improve their educational engagement and, consequently, their educational outcomes. The studies in this category investigate these effects.
- **Non-tuition barriers to education**, which are of interest because access to educational material, uniforms, and efficient transportation solutions play a key role in facilitating school attendance and engagement. The studies in this category are dedicated to analysing these types of barriers and examining their importance.

This collection of studies attempts to identify the causal relationships that exist between policy interventions aimed at enhancing educational accomplishments and women's educational outcomes.

KEY FINDINGS

- School feeding programs, which supply meals to students, are successful when it comes to boosting enrolment and attendance—especially for girls and students from lower socioeconomic backgrounds—and increasing resilience during extreme weather conditions.
- Health interventions, such as sanitation improvements, have been shown to increase educational years and enhance performance, with greater effects for girls.
- Exposure to role models and peer effects, including representation in media like movies and the influence of female classmates, have emerged as a promising, yet under-researched, avenue for influencing girls' academic performance, participation, and aspirations. Interventions of this type have the potential to contribute to challenging stereotypes and shifting women's educational trajectories towards a broader range of educational and career paths.
- Addressing non-tuition barriers can significantly close the gender enrolment gap and lead to improvements in broader social outcomes, such as reducing early pregnancy and delaying marriage, by keeping girls in school longer and expanding their future opportunities.

4.1.1. School feeding programs

In this subsection, we focus on School Feeding Programs (SFPs) that have been shown to improve students' educational outcomes. These programs typically aim to enhance students' academic performance by improving their access to better quality food, which increases their nutritional status and consequently their ability to learn and succeed in school. Jacoby and Skoufias (1997) highlighted that nutritional status can affect children's educational outcomes in low-income countries because fluctuations in family income affect school attendance. SFPs can attract children who face higher school attendance costs and help to alleviate food poverty and promote more consistent school participation. Girls often face additional disadvantages, such as higher opportunity costs related to household duties and gender-specific nutritional needs. Afridi (2010) illustrated in her research how SFPs can play a critical role in closing gender gaps in education, especially in rural and low-income areas, where families may prioritize boys' education when resources are limited. SFPs have been shown to increase girls' school attendance by addressing both nutritional and economic barriers for

more equitable educational opportunities. Table 3 below summarises the five studies reviewed that pertained to SFPs.¹³

Table 3 – School feeding programs

Study	Country	Target	Method	Key findings
Kaur (2021)	India	Primary school students	IV	Mid-day meal scheme program had a positive impact on gross and net primary school enrolment in India. Impacts are larger for girls and disadvantaged population.
Aurino et al. (2023)	Ghana	Primary school students	Experimental	The SFP showed promising results over two years and boosted math and literacy scores, especially for girls and children from less advantaged backgrounds and areas.
Azomahou et al. (2019)	Senegal	Primary school students	Experimental	The SFP had a positive impact on both grades and enrolment rates. The intervention had a marked gender effect. A deworming intervention was found to be more cost-effective than school meals.
Nikiema (2019)	Burkina Faso	Primary school students	DID	Take-home food packages increased school attendance for children, with a notable 3.2% increase in girls' enrolment. This suggests that take-home ratios (THR), as a form of school feeding programme intervention, can boost girls' education and support gender equality in schools.
Staffieri et al. (2023)	Malawi	Children 6–17 years old	DID	The SFP increased school enrolment when weather shocks occurred. The positive impacts were high for older children.

Source: Authors owns table

Kaur (2021) evaluated the impact India's Mid-Day Meal Scheme (MDMS), the world's largest free school lunch program, had on primary school enrolment. The study found this intervention had significant positive effects on enrolment. More specifically, a 1% increase in the program's implementation scope (as determined by the proportion of children receiving free meals) led to a 0.16 p.p. increase in the probability of gross enrolment and a 0.19 p.p. increase in that of net enrolment. The findings also showed that the effects were larger for

¹³ Hereinafter, the papers are listed in each table in the same order as they are presented in the subsequent discussion.

disadvantaged groups and girls, which suggests the MDMS reduced the gender gap in school participation.

Aurino et al. (2023) evaluated Ghana's SFP and found it had heterogeneous effects on educational outcomes by gender. Their research showed that the program moderately improved students' math and literacy scores, with more significant gains for girls and disadvantaged children. The authors mentioned that the program successfully enhanced equitable human capital accumulation despite challenges like financial disbursement delays affecting meal provision.

Similarly, Azomahou et al. (2019) examined the effects a school meal program had on educational outcomes in rural Senegal. They used a randomised experimental method and found the program had positive impacts on academic scores. The authors explored the heterogeneity of effects by gender and found that the program's effect on math scores was greater for girls than boys, while its effect on French scores was greater for boys than girls. However, their research also suggested that from a cost-effectiveness perspective, deworming interventions may offer greater benefits than school meals.

Nikiema (2019) studied an alternative approach implemented by Catholic Relief Services in northern Burkina Faso that involved providing take-home rations (THRs) to children attending primary school. She found that THRs increased both boys' and girls' school attendance, by 8.4 p.p. and 6 p.p., respectively. Additionally, girls' school enrolment rate increased by 3.2% and was driven by the increase in the number of newly enrolled girls compared with boys. Their study concluded that THRs have the potential to enhance girls' educational attainment and promote gender equality in schools.

Staffieri et al. (2023), for their part, investigated the impact SFPs had on primary school enrolment in Malawi during adverse weather conditions. They combined data from household and community surveys with rainfall data and found that having access to SFPs supports enrolment, especially for older children, during periods with extraordinarily little rainfall. While the impact did not differ by gender, the findings suggest that SFPs can modestly improve school completion rates, educational advancement, and human capital formation, and buffer against educational disruptions caused by climate variability.

Conclusion

The studies reviewed show SFPs have had positive impacts on enrolment, academic performance, and gender equality in different countries by enhancing students' nutrition and attracting more children to school. The evidence particularly underscores significant benefits for girls, which contribute to narrowing the gender gap in education. While these programs are crucial for supporting disadvantaged groups and responding to challenges like food poverty and the impact climate variability has on income and nutrition, comparisons with other interventions raise important considerations regarding cost-effectiveness. Overall, SFPs are a valuable tool for advancing education and fostering equitable human capital development; however, strategic investment and context-specific research are needed to enhance their effectiveness and efficiency.

4.1.2. Health interventions

This subsection explores health interventions that had impacts on students' educational outcomes. Improving health by addressing underlying health issues that impede learning is crucial for enhancing students' school attendance and participation, especially for girls, who may face greater barriers to education due to gender-related health challenges or social norms that limit access to healthcare. Miguel and Kremer (2004) provided robust evidence that deworming programs significantly increased school attendance in Kenya. Their study showed the potential of health improvements to impact learning outcomes, by ensuring children are physically able to attend and engage in school. In a follow-up study, Baird et al. (2016) found that the long-term benefits of deworming were especially significant for girls, as improved health during childhood led to not only higher educational attainment but also better economic outcomes for women. This highlights the importance of health interventions when it comes to addressing gender disparities in education and economic opportunities. Table 4 below summarises the three studies reviewed that pertained to health interventions.

Table 4 – Health interventions

Study	Country	Target	Method	Key findings
Makamu et al. (2018)	Nigeria	Children 7–14 years old	DID	Children who participated in a disease control program had higher school enrolment rates and completed more years of education than the untreated cohort. The effects were stronger for

girls in rural areas.				
Orgill-Meyer and Pattanayak (2020)	India	Children 0–5 years old	Experimental	Kids from villages with more latrines scored better on cognitive tests ten years later, with girls benefiting more than boys from this improvement.
Vikram and Chindarkar (2020)	India	Children 8–11 years old	Matching	Early childhood interventions through the ICDS programme boosted children's later cognitive skills, especially in reading and math for girls and kids from low-income families.

Source: Authors owns table

Makamu et al. (2018) examined how a schistosomiasis control program influenced the educational outcomes of school-aged children in Nigeria. They employed a DID methodology and found that program participants exhibited significantly higher rates of school enrolment and completed more years of education than their non-participant counterparts. Notably, in rural regions, the treated cohort gained an average of 0.6 more years of education than the untreated cohort. Furthermore, the study highlighted that this positive effect was observed among girls living in rural areas.

Orgill-Meyer and Pattanayak (2020) looked at long-term responses to improved health conditions and linked improved sanitation to cognitive benefits in rural India. They studied a randomised sanitation campaign in Odisha and found that children from villages with greater latrine coverage scored significantly (around 5%) better on cognitive tests a decade later, with the effect being more pronounced (around 8%) for girls. This suggests that exposure to better sanitation in early childhood has considerable and lasting impacts on cognitive development and that the impact is particularly greater for girls.

Vikram and Chindarkar (2020), for their part, investigated the medium-term effects that India's Integrated Child Development Services (ICDS), a government welfare programme that provides food supplementation, preschool education and primary healthcare to children under 6 years of age, had on the cognitive outcomes of children 8–11 years old. They found

that ICDS had a significant positive impact on cognitive achievement, particularly for girls and children from low-income families. More specifically, participation in any ICDS intervention led to an increase in girls' reading and arithmetic scores. This suggests that ICDS plays an essential role in narrowing gender- and income-related cognitive achievement gaps in India.

Conclusion

Together, the studies reviewed in this subsection highlight the significant impacts health interventions have on educational outcomes and emphasize the crucial role that early health improvements play in fostering long-term human capital development and enhancing labour market prospects. The research underscores the interconnectedness of health and education and shows that interventions in early life can yield substantial benefits in terms of cognitive growth and help to bridge gender and socioeconomic gaps in academic performance. Overall, the studies' findings advocate integrating health initiatives in educational policies to optimize human capital development and highlight the transformative potential of such interventions.

4.1.3. Role models and peer effects

This subsection examines studies that explored the impact role models and peer effects have on educational outcomes, particularly for girls in settings where gender norms are influential. Peer effects can be crucial in shaping academic performance, as Lavy et al. (2012) showed in their exploration of how peer effects vary depending on whether peers are high- or low-achieving students. They found that a greater proportion of low-achieving peers has a negative effect on the performance of regular students. As Beaman et al. (2012) demonstrated, role models play a transformative role in challenging gender stereotypes and shaping the behaviours of girls and women. Their study showed that random exposure to female leadership in Indian villages raised girls' career aspirations and educational attainment. Breda et al. (2023) conducted a large-scale experiment in France and found that brief exposure to female role models in scientific professions significantly diminished the stereotypical perceptions of science-related careers and gender-based differences in abilities, and encouraged high-achieving girls in Grade 12 to pursue enrolment in selective and traditionally male-dominated fields in science, technology, engineering, and mathematics (STEM) at the college level. The studies reviewed that pertained to role model and peer effects demonstrate how exposure to female role models and the gender composition of peer groups can significantly influence students' aspirations, academic performance, and

educational progression. While our query and inclusion and exclusion criteria resulted in only two studies in this topic, we included Riley's (2024)* article 'Role Models in Movies: The Impact of Queen of Katwe on Students' Educational Attainment'¹⁴ because it is relevant to the context of role models in education in developing countries. Table 5 below summarises the three studies reviewed that pertained to role model and peer effects.

Table 5 – Role models and peer effects

Study	Country	Target	Method	Key findings
Riley (2024) *	Uganda	Secondary school students	Experimental	Watching a movie that features a female role model just prior to an exam improved students' performance, especially in math and among female students. It also increased the likelihood of female students continuing their education.
Priyanka (2022)	India	Post-primary students	IVs	Exposure to female politicians enhanced urban women's education completion rates and prompted rural women to invest more in their children's education. It also boosted women's involvement in household decisions and decreased their preference for sons.
Borbely et al. (2023)	Ethiopia	Primary school students	Experimental	Girls experienced positive outcomes from being in classes with a higher proportion of female peers, including fewer absences and better performance in math.

Source: Authors owns table

Riley (2024) * studied a unique intervention in Uganda that involved having randomly selected groups of students watch *Queen of Katwe*, a film that highlights a strong female role model. They discovered that those who watched the film achieved higher scores on the national examination held shortly after the viewing. Moreover, viewing the film was associated with a higher likelihood of students advancing to higher levels of education, particularly among female students, and resulted in the gender gap in educational continuation effectively being narrowed. Two years post-intervention, the students who watched the film performed better on the final exit exam than those who did not watch it. Furthermore,

¹⁴ The article was published in the *Review of Economics and Statistics* in March 2024, after we had completed our search for the systematic component of the literature review.

students in upper secondary school who were exposed to the film were found to be more likely (by 6 p.p.) to apply to public universities. This effect was most pronounced among female students (who were 15 p.p. more likely to apply) and resulted in the gender disparity in university applications submitted by male and female students being eliminated.

Priyanka (2022) contributed to the literature on role models by investigating the influence female politicians had on educational outcomes and intergenerational spending on education in India. They used closed mixed-gender elections won by women as an instrument for the election of female legislators and found that exposure to female politicians during adolescence increased urban women's likelihood of completing upper secondary schooling. Additionally, they reported it led rural women to allocate more resources to their children's education, particularly in households with more daughters, and fostered greater participation in household decision-making and a reduction in preference for sons.

Borbely et al. (2023) explored how the gender composition of classes affected school absences and math test scores in Ethiopia utilizing the natural experiment of random classroom assignment. Their analysis showed that girls experience positive outcomes, including fewer absences and better performance in math, from being in classes with a higher proportion of female peers. The trend did not hold for boys, who was unaffected by the gender composition of their classes. More specifically, transitioning from a class with no female peers to an all-girls class could result in a girl missing 10.5 fewer days of school annually on average. These findings suggest that the presence of female peers also plays a key role in improving girls' educational engagement and achievements, particularly in environments with strong gender norms and limited educational resources.

Conclusion

The findings of the studies reviewed in this subsection suggest that exposure to female role models and more female peers can be powerful tools for promoting educational equity and women's empowerment. However, there remains a significant opportunity for further research, especially in low-income countries, to explore the potential these influences have in the classroom and the broader school environment. Investigating how direct engagement with role models and peer dynamics in educational settings can influence student outcomes, aspirations, occupational choices, and attitudes could provide valuable insights to design more effective interventions aimed at fostering equitable and inclusive education systems.

4.1.4. Non-tuition barriers to education

This subsection synthesises the findings of studies that investigated interventions aimed at overcoming non-tuition barriers to education. The term ‘non-tuition barriers’ refers to a range of factors beyond school fees that prevent students from accessing education, including the cost of uniforms, books, and transportation. These barriers may disproportionately affect marginalised populations, particularly in rural or low-income areas, where families might struggle to afford these indirect costs even when tuition fees are eliminated. Moreover, other structural factors, such as cultural norms and safety concerns for girls, may exacerbate these barriers and further prevent girls from accessing education in many contexts. Glewwe et al. (2009) found that providing educational resources can produce outcomes that are differentiated by students’ characteristics. Their study showed that access to textbooks improved the test scores of the best students but had negligible effect on those of the others. Kazianga et al. (2013) demonstrated that tailoring interventions to address women-specific barriers—such as building ‘girl-friendly’ schools equipped with amenities like separate latrines to alleviate physical and safety-related challenges—can significantly improve educational outcomes for girls by impacting both their enrolment and their tests scores.

Together, the studies reviewed in this subsection emphasize the importance of adopting tailored approaches to dismantle the barriers that impede girls’ access to education, particularly in challenging environments. Table 6 below summarises the four studies reviewed that pertained to non-tuition barriers to education.

Table 6 – Non-tuition barriers to education

Study	Country	Target	Method	Key findings
Giordono and Pugatch (2017)	Gambia	Secondary school girls	DID	A scholarship program that covered non-tuition costs like uniforms and books increased girls' enrolment in secondary school and the number of girls who took the Grade 9 exit exam.
Duflo et al. (2015)	Kenya	Grade 6 students	Experimental	An education subsidy that covered the cost of uniforms significantly reduced dropout and early pregnancy rates. The program resulted in a 3-p.p. reduction in pregnancies over three years and a 7% difference in childbearing rates between the subsidy and control groups after seven years.

Muralidharan and Prakash (2017)	India	Secondary school girls	DID	Providing bicycles to girls reduced the gender enrolment gap and increased girls' enrolment and performance in secondary school. The program addressed transportation barriers, such as safety concerns regarding girls' mobility, and may have also generated positive externalities that made it more socially acceptable for girls to attend school further away from home. The program was more cost-effective than cash transfer initiatives at boosting girls' enrolment.
Seebacher (2023)	India	Secondary school girls	DID	The synergistic effects of bicycle access and infrastructure availability led to a 60% increase in enrolment for girls living 3–10 km from school. The findings suggest that bicycle programs might be effective only if high-quality road infrastructure is available and schools are nearby.

Source: Authors owns table

Giordono and Pugatch (2017) explored the impact eliminating non-tuition fees, including the cost of uniforms, books, and other supplies, had in Gambia. Their study looked at a government initiative that eliminated informal fees for girls and observed a significant uptick as a result in female educational engagement in the form of a 13% increase in enrolment. Similarly, Duflo et al. (2015) evaluated the effects a uniform subsidy had on school attendance as well as early pregnancy, marriage, and sexually transmitted infection (STI) rates in Kenya. They used an RCT to study two interventions—education subsidies and HIV education programs—individually and together. They found that providing free uniforms not only significantly reduced dropout rates but also resulted in a 3-p.p. decrease in early pregnancies, and fewer marriages, over three years, while the HIV curriculum did not reduce pregnancy or STI rates. Unexpectedly, combining the two programs reduced the STI rate, but the dropout and early pregnancy rates less than only subsidizing the uniforms. The subsidy intervention's long-term effects included a 7% difference in childbearing rates between the subsidy and control groups after seven years. These findings indicate that removing informal fees can enhance girls' educational participation and result in broader social implications in contexts where formal fees had already been eliminated.

Muralidharan and Prakash (2017) assessed the Cycle program in Bihar, India, which provided bicycles to girls to attend secondary school. The program not only reduced the distance barrier, but may have also generated positive externalities, including increased safety through group travel, peer effects on both girls' and parents' demand for schooling, and greater social acceptability of girls leaving their villages to attend school. Together, these factors contributed to a remarkable 32% boost in enrolment and a 40% reduction in the gender gap in enrolment. Similarly, Seebacher (2023) highlighted the synergistic effects of bicycle access and all-weather roads, and noted they resulted in a substantial 60% increase in enrolment among girls residing 3–10 km from school who had access to adequate road infrastructure, which reduced the gender gap in enrolment by 51%. However, no benefits were observed for girls in villages without all-weather roads or those living more than 10 km from school. These findings highlight the role transportation solutions play in bridging the distance to education, especially when they are complemented by adequate infrastructure and a focus on addressing cultural and safety barriers to girls' mobility.

Conclusion

Together, the studies reviewed in this subsection illustrate the transformative power of addressing non-tuition barriers as a key enabler of girls' educational participation and performance. In places where tuition fees have been eliminated, indirect costs and mobility-related concerns may remain substantial obstacles for certain groups of students. Scholarship programs and infrastructure improvements, such as providing uniforms or bicycles and improving road conditions, demonstrate that alleviating these other financial, logistical, and social barriers can significantly boost enrolment and reduce gender gaps. Additionally, these types of interventions can have broader social impacts, such as decreasing early pregnancy rates and delaying marriage, by enabling girls to stay in school longer and pursue further education.

4.2 Educational interventions focused on gender equality outcomes.

We categorised the studies that pertained to educational interventions focused on broader gender equality outcomes into different subsections depending on their specific gender equity promotion objectives. These interventions include initiatives that target various

educational and life stages to not only improve women's skills and economic opportunities but also challenge and shift gender norms and social structures. The categories are:

- **Educational attainment initiatives**, which lay the foundational skills women need for further academic achievement and professional pursuits. Interventions of this type aim to enhance educational attainment within conventional schooling frameworks, including primary and secondary school, and by doing so, increase women's agency and result in delayed marriage and childbirth, and improved health practices.
- **Vocational and skills training** in various areas, which aims to equip women with the skills and knowledge necessary to improve their employment prospects, income-generating activities, and financial decision-making. Interventions of this type are particularly valuable in regions where early marriage and childbearing or limited access to education restrict women's economic opportunities.
- **Training for entrepreneurs**, which focuses on enhancing business practices or encouraging self-employment. Initiatives of this type aim to equip women with the knowledge and skills they need to start or improve their own business and thereby promote women's economic independence and financial security.
- **Childcare provision**, which addresses barriers to women's participation in the labour market by providing access to affordable childcare. Interventions of this type reduce the burden of unpaid care work and enable women to engage more actively in formal employment, especially in regions with limited formal childcare options.
- **Other educational interventions** that did not fit into the above categories. Interventions of this type reveal the complex and varied impacts educational initiatives can have on gender outcomes and underscore the importance of context-sensitive approaches.

KEY FINDINGS

- Interventions that increase girls' educational attainment typically led to improved educational outcomes, delayed marriage and childbirth, and improved health

practices.

- Educational policies that focus on women's education may result in reduced fertility rates and increased social awareness.
- Vocational training enhances women's employment opportunities, earnings, and financial autonomy.
- The complex interplay that exists between business management and financial skills training makes it particularly challenging for interventions to positively impact female entrepreneurs and highlights the need for carefully tailored support mechanisms.
- Addressing childcare barriers enables women to participate in the labour market and thereby increases household income and reduces poverty.
- When designing interventions that directly target gender equality and civic education, context-specific approaches must be carefully designed, and local gender norms and societal barriers must be taken into consideration to maximize benefits and avoid unintended consequences.

4.2.1. Educational attainment initiatives

Educational attainment has been found to impact several outcomes that are often particularly relevant to girls. For instance, Breierova and Duflo (2004) looked at a massive school construction program in Indonesia and found that increasing girls' educational attainment significantly reduced fertility rates and delayed marriage. Similarly, Osili and Long (2008) provided evidence from Nigeria that demonstrated schooling girls leads to a substantial reduction in adolescent fertility rates. In this subsection, we examine the main findings of the studies reviewed that pertained to educational attainment initiatives and attempted to identify the causal impacts educational attainment in primary and secondary school has on outcomes that influence women's empowerment in low-income and lower-middle-income countries. The studies explored a range of outcomes, including reductions in fertility rates, delayed marriage and childbirth, improvements in children's health, increased political awareness, shifts in economic participation, and enhanced decision-making autonomy within households. The interventions studied focused on expanding access to education for girls through monetary incentives, by increasing school capacity, or by introducing specific curricula designed to promote gender equality. Table 7 below summarises the seven studies reviewed that pertained to educational attainment initiatives.

Table 7 – Educational attainment initiatives

Study	Country	Target	Method	Key findings
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Ozier (2018)	Kenya	Secondary school girls	RDD	Secondary school attendance was associated with a reduction in teen pregnancy for female students.
Brudevold-Newman (2021)	Kenya	Secondary school girls	DID – continuous treatment intensity	An increase in secondary school attendance following a national education reform was associated with a reduction in marriages and first births at each age. Additionally, it shifted workers to higher-skilled sectors.
Adu Boahen and Yamauchi (2018)	Ghana	Primary school girls	RDD	An increase in primary school attendance following a national education reform was associated with lower pregnancy and marriage rates among adolescents, especially girls living in poorer households or rural
Keats (2018)	Uganda	Primary school girls	RDD	An increase in primary school attendance following the elimination of primary school fees was associated with lower adolescent pregnancy rates and better health practices for their
Musaddiq and Said (2023)	Pakistan	Secondary school girls	DID	An increase in secondary school completion following a conditional cash assistance program for girls attending secondary school was associated with lower adolescent pregnancy rates and better health
Hahn et al. (2018)	Bangladesh	Secondary school girls	IVs	An increase in secondary school attendance following a reform that made secondary education free for rural girls was associated with delayed marriage and better maternal care practices. Additionally, it decreased the likelihood of marriage to men working in agriculture or the informal
Friedman et al. (2015)	Kenya	Secondary school girls	Experimental	Improved education, in terms of enrolment, attendance, and performance, following the introduction of a merit scholarship program for girls was associated to decreased acceptance of domestic violence and increased political

Source: Authors owns table

Ozier (2018) studied the impact attending secondary school had on fertility rates in Kenya. Their main finding was that attending secondary school was associated with a 12 p.p. reduction in pregnancy at the age of eighteen for female students. Similarly, Brudevold-Newman (2021) evaluated the impact of Kenya's 2008 national secondary education expansion (SEE) program, which reduced secondary school fees and increased capacity. They found that the program led to increases of 0.75 years in average schooling and 6–16 p.p. in

secondary school completion among older cohorts. It also decreased the likelihood of first marriage 40–50% and first childbirth 25–45% at each age. In terms of occupational shifts, the SEE program steered young adults away from agriculture into more skilled sectors and might have deferred their entry into the labour force.

Adu Boahen and Yamauchi (2018) looked at Ghana’s Free Compulsory Universal Basic Education (FCUBE) policy and examined how education is related to adolescent fertility and early marriage. Their findings revealed that education has a substantial negative impact on both adolescent fertility and early marriage—a one-year increase in education among the treated group correlated with a reduction in adolescent fertility of 0.11 births and a 14-p.p. decrease in early marriage rates. The effects were heterogeneous, and impact was more pronounced for girls from poorer households and those residing in rural areas.

Keats (2018) leveraged the introduction of Uganda’s Universal Primary Education (UPE) program, which eliminated primary school fees starting in 1997, to study the effects women’s education has on fertility and child health outcomes. They documented increases of 5.7 p.p. in the likelihood of completing primary school and 2.8 p.p. in the probability of completing secondary school. Furthermore, there was a notable 6.6-p.p. reduction in the incidence of first births at the age of sixteen. Moreover, the presence of a health practitioner at the birth of the first child increased by 29 p.p., which points to improved maternal healthcare during childbirth. The study also reported a substantial 13-p.p. decrease in the prevalence of stunting among first-born children for each year of exposure to the program and highlighted that each additional year of maternal education significantly boosted the likelihood of first-born children receiving key vaccinations.

Studies have also highlighted educational interventions in Pakistan and Bangladesh that incorporated conditional cash transfer programs and educational stipends had long-term outcomes and significantly improved educational achievements, delayed marriage, and childbirth, and enhanced maternal and child health. Musaddiq and Said (2023) found that the Female Secondary School Stipend Program in Punjab increased the likelihood of completing secondary education and improved prenatal care utilization and showed that financial incentives that promote education among girls can have enduring benefits. Their findings highlighted that the program reduced the probability of girls marrying before the age of sixteen and increased the chances of having a prenatal checkup. Moreover, the program

contributed to a decrease in negative health outcomes for children born to mothers who were exposed to the program, with a 0.5-p.p. reduction in both the likelihood of being underweight and the incidence of stunting among these children. Similarly, Hahn et al. (2018) showed that the Female Secondary School Stipend Program in Bangladesh increased the age at first marriage and significantly improved maternal healthcare and women's autonomy. They also noted shifts in marriage patterns, with a 4.7-p.p. decrease in marriages to men working in agriculture, a 1.3-p.p. decrease in marriages to men working in the informal sector, and a 5.5-p.p. increase in marriages to men working in the formal sector.

Moreover, education interventions have been found to affect domestic violence acceptance and political outcomes. Friedman et al. (2015) studied Kenya's Girls' Scholarship Programme (GSP), which rewarded Grade 6 girls who scored in the top 15% on a standardised exam by covering their school fees for the following two years and providing some extra money for other expenses, and found that improved education following participation in that programme resulted in a decrease in acceptance of domestic violence and increased political knowledge among young women. There was a notable 6.8-p.p. decrease in acceptance of domestic violence as well as a 2.4-p.p. reduction in marriages arranged with family involvement in spouse choice, which points to a shift towards rejecting harmful traditional practices and towards increased personal autonomy in marriage decisions for women, with a significant 18.1-p.p. decrease in lack of autonomy. Additionally, the program led to a remarkable 20.3-p.p. increase in political knowledge among participants, which suggests greater awareness and understanding of political issues.

Conclusion

Together, the findings of the studies reviewed in this subsection support the idea that initiatives that target girls' and women's education are fundamental to development strategies based on the rationale that investing in girls' and women's education not only benefits individuals but also leads to broader societal progress. They show that policies that aim to promote educational attainment among primary and secondary school girls can significantly empower women and girls in lower-income and lower-middle-income countries by enabling them to make informed decisions about their lives that may have long-lasting effects. These policies lead to reductions in fertility rates, delays in marriage and first childbirth, improvements in children's health outcomes, and heightened awareness of social norms, including gender-based violence, and political issues. The effects were pronounced across various contexts, although context-specific characteristics must be considered.

4.2.2. Vocational and skills training

There is an emerging body of literature that analyses the impacts of training interventions aimed at enhancing women's professionally relevant skills, improving their access to higher-paying jobs, or increasing their control over finances and businesses. These types of interventions are particularly relevant for women, who often face limited access to skills development opportunities, especially in lower-income contexts where challenges such as early marriage and childbearing can further restrict their educational and economic prospects. Attanasio et al. (2011) provided evidence that subsidised vocational training for disadvantaged youth in Colombia significantly improved employment outcomes, especially for women. However, Cho et al. (2013) encountered gender-specific challenges that restricted such progress in Malawi—they found that women faced family obligations that resulted in higher dropout rates from a vocational training program. The studies in this subsection illustrate that vocational and skills training can be applied using different approaches and in a variety of contexts, and the degree of effectiveness of such interventions depends on the intervention's design and the cultural setting. Table 8 below summarises the seven studies reviewed that pertained to vocational and skills training.

Table 8 – Vocational and skills training

Study	Country	Target	Method	Key findings
Maitra and Mani (2017)	India	Women from low-income households	Experimental	Subsidised vocational training was associated with higher employment and self-employment rates, earnings, and number of weekly hours worked.
Croke et al. (2023)	Nigeria	Recent university graduates	Experimental	An ICT training program for recent university graduates was associated with to increased employment in the ICT sector.
Bandiera et al. (2020)	Uganda	Adolescent girls	Experimental	An intervention that combined vocational training with information about women's empowerment was associated with higher rates of income-generating activities and self-employment, and lower rates of pregnancy and marriage.

Gulesci et al. (2021)	Bolivia	Youth	Experimental	A multifaceted intervention that included skills training, sex information, mentoring, and job-finding assistance was associated with higher income and lower levels of reported violence towards female adolescents.
Grohmann and Schoofs (2021)	Rwanda	Illiterate women	IVs	Following a financial literacy intervention, women with higher financial literacy levels were more involved in making financial and expenditure decisions within their households.
Gazeaud et al. (2023)	Tunisia	Adults	Experimental	Women who received a significant cash grant and gender-sensitive financial training engaged in more income-generating activities, but only when their husbands did not attend the training.
Quisumbing et al. (2021)	Bangladesh	Adults	Experimental	A combination of agricultural training, nutrition behaviour change communication, and gender-awareness training had positive impacts on women's empowerment scores. The findings suggest that having husbands participate too contributed to the results.

Source: Authors owns table

Maitra and Mani (2017) used an experimental method to assess the effects that an intervention that provided subsidised vocational training in stitching and tailoring to women from low-income households in India had 6- and 18-months post-intervention. Their findings revealed that the women who participated in the program experienced significant improvements. They were 6 p.p. more likely to be employed and 4 p.p. more likely to be self-employed, worked 2.5 more hours per week, and earned 150% more than the women in the control group. Importantly, the results were sustained over the medium term, and a cost-benefit analysis determined that the returns from program participation compensated its costs in less than four years of employment.

Croke et al. (2023) examined the impact a job training program for recent university graduates in Nigeria had on employment in the information and communications technology (ICT) sector. The program was designed to transition workers into the ICT sector and included training on basic software use and oral and written communication. The authors assessed the program's overall effect on employment in the sector and how skills, spatial mismatches, and

gender norms influenced sector switches. They found that the program increased employment in the ICT sector by 26% for participants, which reveals the importance of sector-relevant skills and suggests that training can help overcome social norms that restrict women's labour market mobility.

Some studies have assessed the effectiveness of training programs when combined with specific strategies designed to promote women's empowerment. For example, Bandiera et al. (2020) evaluated a vocational training intervention in Uganda that was designed to empower female adolescents by combining skill-building to enable them to start small-scale income-generating activities with information on sex, reproduction, and marriage. In terms of labour market outcomes, four years post-intervention, participants were 4.9 p.p. more likely to engage in income-generating activities and had a 5.9-p.p. higher rate of self-employment than non-participants. When it comes to fertility and marital status, participants had a 3.8-p.p. less likelihood of pregnancy and an 8.0-p.p. less likelihood of being married than non-participants.

Gulesci et al. (2021), for their part, evaluated the impact a youth empowerment program in Bolivia had on violence against girls during the COVID-19 pandemic. The program, which offered soft and technical skills training, sexual education, mentoring, and job-finding assistance, was assessed using an RCT involving six hundred vulnerable adolescents. The authors noted a significant reduction in violence against girls and an increase in girls' earnings seven months post-intervention. Female participants were 9.5 p.p. less likely to report suffering any violence, 10 p.p. less likely to suffer psychological violence, and 3 p.p. less likely to experience sexual violence. Finally, participants had a 41% increase in total income compared to the control group.

Grohmann and Schoofs (2021) investigated the impact a financial literacy intervention had on women's participation in household financial decisions in Rwanda. They used savings group data and found that the women with higher financial literacy levels were more involved in making financial and expenditure decisions within their households. Additionally, they explored the gender gap in financial literacy and attributed it to differences in education, happiness, symptoms of depression, and openness to innovative ideas, while also acknowledging the influence of societal and cultural factors.

Gazeaud et al. (2023) conducted a three-arm RCT to assess the impact an intervention that provided financial and human capital support had on women's income-generating activities in Tunisia and examined the effect that including husbands in the process had. The women who received the significant cash grants and gender-sensitive financial training engaged in more income-generating activities, but this effect was observed only when husbands were not involved in the process. More specifically, the women who received the money transfers and training without their partner were 3.3 p.p. more likely to engage in an income-generating activity. Although the intervention did not significantly impact women's agency, it improved household living standards, which highlighted its cost-effectiveness while also highlighting the complexities involved in fostering women's empowerment in traditional settings.

Finally, Quisumbing et al. (2021) assessed the ANGeL project in Bangladesh, which sought to enhance nutrition, income, and women's empowerment by providing agricultural training, nutrition behaviour change communication, and gender-awareness training to both men and women. The authors conducted a cluster-RCT to investigate the effects these interventions had on women's empowerment, as measured by the project-level Women's Empowerment in Agriculture Index (pro-WEAI), and gender attitudes. Their results showed the interventions had significant positive impacts on women's empowerment scores across all treatment groups, with increases of 8–13 p.p. in the prevalence of empowered women. Notably, adding gender-awareness training did not amplify these effects. Despite slight improvements in gender attitudes, there was no reduction in workloads or intimate partner violence. These results, when compared with findings from other studies, suggest that the impact of involving men in empowerment programs can vary significantly depending on cultural norms, power dynamics, and the context of the intervention. This highlights the fact that these aspects must be carefully evaluated through a gender lens when designing projects to ensure that strategies are tailored to address specific challenges and opportunities within each setting.

Conclusion

The findings of the studies reviewed in this subsection showed that training interventions have the potential to improve economic and social outcomes for women in various contexts. Vocational training initiatives, such as interventions focused on specific occupations, have been found to have significant benefits in terms of employment and income, while skills training programs like financial literacy training have been shown to enhance women's

decision-making power within households. Additionally, combining these programs with complementary strategies, such as mentoring or reproductive health education, can extend their impact and contribute to reducing women's vulnerability to, for example, violence and early marriage. The mixed findings that resulted from having husbands participate too and incorporating gender-awareness training indicate that careful consideration must be given to cultural dynamics and family involvement, which may influence the outcomes of women's empowerment efforts. Tailoring interventions to specific contexts is crucial to effectively address barriers and maximize impact.

4.2.3. Training for entrepreneurs

The studies reviewed in this subsection focused on interventions that provided business management and financial skills training to foster entrepreneurship or enhance business owners' business practices. Notably, the scope of the studies extended beyond assessing the impact entrepreneurial training had on business performance, as the studies analysed how training influences outcomes when it is combined with other interventions such as access to savings accounts, loans, or cash transfers. However, achieving substantial improvements is not always straightforward. McKenzie and Woodruff (2014), for instance, conducted a comprehensive review of business training and entrepreneurship programs across developing countries and showed that when improvements in business practices and sales or profits were found, they tended to be modest in magnitude. Moreover, female entrepreneurs often face unique constraints, including limited access to financial resources, social networks, and time due to domestic responsibilities, which makes designing effective programs for them even more challenging. Calderon et al. (2013) showed that while it is challenging to design successful programs, it is indeed possible. They conducted an RCT in rural Mexico and found that business skills courses can significantly improve women's business performance and economic outcomes. While some of the interventions we report on in this subsection were explicitly designed for women, others did not target women directly but explored heterogeneous effects by gender, which we highlight. Table 9 below summarises the seven studies reviewed that pertained to training for entrepreneurs.

Table 9 – Training for entrepreneurs

Study	Country	Target	Method	Key findings
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Berge et al. (2015)	Tanzania	Entrepreneurs	Experimental	An intervention targeting entrepreneurs that combined business training with grants generated positive effects for men, but no effects for women.
Fiala (2018)	Uganda	Microentrepreneurs	Experimental	A microfinance intervention or training generated positive effects for men, but no effects for women.
Batista et al. (2022)	Mozambique	Microentrepreneurs	Experimental	Fiscal management skill-building combined with access to mobile savings accounts was associated with increased profits and financial security for women.
Blattman et al. (2016)	Uganda	Extremely poor war-affected women	Experimental	Microenterprise support provided in the form of cash transfers, training, and supervision was associated with higher microenterprise ownership and income.
Gobin et al. (2017)	Kenya	Ultra-poor women	Experimental	A graduation program that combined business training and mentoring with cash transfers had positive impacts on women's income and capital accumulation.
Huis et al. (2019)	Vietnam	Female microfinance borrowers	Experimental	Business training combined with specific women's empowerment modules increased their intra-household decision making power. Importantly, having husbands attend the training did not produce extra benefits.
Bjorvatn et al. (2020)	Tanzania	Youth	Experimental	An edutainment shows about entrepreneurship increased interest in entrepreneurship, particularly among girls, but decreased school performance and did not affect business ownership.

Source: Authors owns table

Berge et al. (2015) investigated the impact combining human and financial capital interventions had on microenterprise development in Tanzania. They evaluated a field experiment that involved providing business training and grants to entrepreneurs and found that while male entrepreneurs benefited significantly from the combination of training and financial support, female entrepreneurs did not experience the same positive effects. Their findings suggest that long-term finance is a crucial constraint for entrepreneurs, but business

training is necessary to effectively utilize financial capital. Their study also highlights the need for tailored interventions to support female entrepreneurs. Similarly, Fiala (2018) found female microentrepreneurs in Uganda obtained no significant benefits from either a microfinance intervention or training. However, their findings showed that male-owned enterprises exhibited substantial profit increases when provided with loans, which suggests that repayment obligations might encourage productive investment. Together, these findings support the idea of designing tailored interventions to support female entrepreneurs.

Batista et al. (2022), for their part, explored the impact access to mobile savings accounts and fiscal management skill-building had on microenterprises in Mozambique. They found that these types of interventions can significantly improve business performance, especially when used together, which leads to increased profits and financial security for female entrepreneurs and helps to close the gender profit gap. The key drivers of improvements included enhanced fiscal management practices, such as bookkeeping; increased savings; and a reduction in the frequency and size of transfers to family and friends, often referred to as the “family tax.” Their evidence again highlighted gender-based heterogeneity in responses to business training.

Blattman et al. (2016) evaluated the impact microenterprise support had on extremely poor war-affected women in Northern Uganda. The intervention included the provision of \$150 cash, five days of business skills training specifically designed for women in vulnerable socioeconomic conditions, and ongoing supervision. Overall, the authors found the intervention generated significant positive outcomes: participants doubled their microenterprise ownership and income, from petty trading, 16 months after receiving the grants. They also investigated the role that social capital played and found that induced group bonds, informal insurance, and cooperative activities yielded positive returns. However, supervision increased business survival but not consumption.

Gobin et al. (2017) evaluated Kenya’s Rural Entrepreneur Access Program aimed at promoting entrepreneurship among ultra-poor women. They reported the program differed from traditional asset transfer models because it provided cash transfers alongside business skills training, mentoring, and savings. The authors found that after six months, the program had significant positive impacts on participants’ income (44.5% higher than the control

group's), savings (34.6% higher), and asset accumulation (26.4% higher), and thus contributed to alleviating poverty.

Huis et al. (2019) studied an alternative approach in northern Vietnam that combined training with specific women's empowerment modules. The Gender and Entrepreneurship Together Ahead (GET Ahead) program aimed to enhance women's empowerment by offering female microfinance borrowers business training that focused on entrepreneurial skills from a gendered perspective. The authors applied an experimental method and found that the GET Ahead program significantly improved women's empowerment in terms of increased personal empowerment, as measured by control beliefs, and relational empowerment, as measured by enhanced intra-household decision-making power and decreased relational friction. Importantly, they also noted that having husbands attend the training did not produce extra benefits. The authors determined the program had mid-term effects after 12 months, but no short-term effects.

Finally, Bjorvatn et al. (2020) highlighted the need for caution when promoting entrepreneurship among youth. They conducted an RCT to examine the impact an edutainment shows about entrepreneurship had on Tanzanian adolescents. Secondary school students were encouraged to watch the show. The authors' findings indicate that while the show increased interest in entrepreneurship, particularly among girls, it negatively affected school performance and did not significantly increase business ownership. This suggests it is important to carefully consider the broader implications of media-based educational interventions.

Conclusion

The studies reviewed in this subsection shed light on the complex interplay that exists between business management and financial skills training and the differential impacts it has on entrepreneurship and business practices across genders. Evidence from a variety of interventions—ranging from combined human and financial capital interventions in Tanzania to the provision of access to mobile savings accounts in Mozambique—consistently points to significant gender-based heterogeneity in responses. While some interventions enhanced business performance, particularly among women, others failed to do so, which underscores the need to tailor support mechanisms to the unique needs and constraints of female entrepreneurs.

4.2.4. Childcare provision

The studies reviewed in this subsection examined the role that childcare provision plays in enabling women to participate in the labour market. Access to affordable and reliable childcare can significantly impact women's ability to pursue employment, particularly in developing countries where formal childcare options may be limited. Martínez and Peticarà (2017) showed this was the case in Chile, where increased childcare service availability positively affected maternal labour force participation and employment. Only one of the studies that was selected using our query and inclusion and exclusion criteria directly addressed the effects childcare provision has on maternal labour outcomes. However, we chose to include an additional study, by Berlinski and Galiani (2007)*, due to its relevance to the topic at hand and the contribution it has made to understanding the impact childcare has on women's labour market participation—regardless of the fact that its intervention of interest took place in a middle-income country. Table 10 below summarises the two studies reviewed that pertained to childcare provision.

Table 10 – Childcare provision

Study	Country	Target	Method	Key findings
Dang et al. (2022)	Vietnam	Children 1–5 years old	IVs & RDD	Childcare provision positively impacted women's labour market outcomes and household income.
Berlinski and Galiani (2007) *	Argentina	Children 3–5 years old	DID	An expansion of pre-primary facilities significantly increased preschool enrolment and boosted maternal employment rates.

Source: Authors owns table

Dang et al. (2022) explored the impact childcare provision for children aged 1–5 had on maternal employment in Vietnam and determined it yielded a 25-p.p. increase in women's probability of employment. The increase was particularly pronounced among women of the ethnic majority and women with daughters and was more observable in wealthier regions. Childcare policies reduce the burden of unpaid care work and enhance labour market engagement by facilitating women's entry into wage-earning and formal employment.

Berlinski et al. (2007) *, for their part, examined the impact expanding pre-primary school facilities had on maternal employment in Argentina. They applied a difference-in-differences methodology and found that increased preschool availability led to a substantial increase in maternal employment, particularly among low-income mothers. The expansion enabled

women to transition from informal or part-time work to full-time employment and thereby boosted household income and reduced poverty. Whereas Dang et al. (2022) reported effects were stronger in wealthier regions in Vietnam, Berlinski et al. (2007)* found these positive effects were most evident among mothers with lower educational levels in Argentina, which suggests that formal childcare can also serve as an effective tool for labour market inclusion, particularly for vulnerable groups.

Conclusion

Together, the studies reviewed in this subsection illustrate the significant role that formal childcare plays in promoting maternal employment. Their findings emphasize the potential childcare policies must facilitate women's transition into the workforce, advance gender equality, increase household income, and reduce poverty. However, variations across regions and demographic groups underscore the need to tailor policies to specific cultural and socioeconomic contexts.

4.2.5. Other educational interventions

This subsection examines two studies that looked at educational interventions that did not fit into the previously mentioned categories. One intervention aimed to promote gender equality, and the other, civic engagement. Both targeted both men and women and analysed the results by gender to determine the heterogeneity of effects. The studies reviewed here reveal that even well-intentioned programs can produce undesired results depending on the context and the specific challenges that are faced by diverse groups. Table 11 below summarises the two studies reviewed that pertained to other educational interventions.

Table 11 – Other educational interventions

Study	Country	Target	Method	Key findings
Dhar et al. (2022)	India	Adolescents	Experimental	A classroom discussion on gender equality improved gender attitudes among students and had long-lasting effects. Boys exhibited a greater change in attitudes and behaviours than girls did because girls face more social constraints that prevent them from changing their behaviour.
Gottlieb (2016)	Mali	Adults	Experimental	A civic education course widened the gender gap by increasing civic activity among men while decreasing it among women.

Source: Authors owns table

Dhar et al. (2022) evaluated an educational intervention aimed at promoting gender equality among adolescents in Haryana, India. The program, which consisted of classroom discussions on gender equality, significantly improved gender attitudes among students as measured by an index of gender-equal behaviours and had a lasting effect even two years later. It also led to more gender-equal self-reported behaviour among participants. In addition, the authors found that the intervention had different impacts on boys and girls, with boys exhibiting a greater change in attitudes and behaviours, such as doing more chores and encouraging their sisters' education, than girls did, which suggests that boys can change their behaviour more easily than girls because girls face more societal constraints that prevent them from changing their behaviour.

Gottlieb (2016) explored how a civic education course administered in Mali affected men's and women's civic participation and knowledge. While the course was designed to increase civic engagement and was attended equally by people, the authors found it inadvertently widened the gender gap by increasing civic activity among men while decreasing it among women. This was attributed to existing gender norms and social barriers that discourage women's public participation.

Conclusion

The studies reviewed in this subsection highlight the fact that programs designed to promote empowerment can have complex and sometimes unexpected outcomes. While the interventions exhibited potential benefits, such as improved gender attitudes following classroom discussions on gender equality and increased civic knowledge following civic education courses, they also revealed the persistent challenges that entrenched gender norms and societal barriers pose. Our findings also underscore the need for context-sensitive, carefully designed interventions that account for broader societal dynamics. Efforts to foster gender equality should be structured to acknowledge different experiences and responses to empowerment initiatives among various groups to be sure they do not unintentionally reinforce existing disparities.

V. Conclusion

The analysis and synthesis that are presented in this literature review provide a comprehensive overview of how various educational interventions and training programs can promote gender equality and women's empowerment in low-income and lower-middle-income countries. The studies that pertained to interventions aimed at improving women's educational outcomes covered school feeding programs, health interventions, role model and peer effects, and the overcoming of non-tuition barriers to education. Those that pertained to educational interventions that focused on broader gender equality outcomes looked at the empowerment effects of educational attainment, vocational and skills training, training for entrepreneurs, childcare provision, classroom discussions, and civic education courses. This review showed that most of the interventions studied contributed to key outcomes that help to reduce gender disparities, such as educational attainment, increased employment and income, improved health practices, delayed marriage, fewer early pregnancies, and enhanced household decision-making agency.

It is evident from these findings that educational interventions and training programs hold significant potential for advancing gender equality and women's empowerment even in challenging contexts. However, mixed findings across several topics highlight the fact that the effectiveness of these programs often depends on addressing the diverse and context-specific needs women and girls have and barriers they face. Researchers, policymakers, and practitioners must continue to design and implement interventions that go beyond simply providing access to education and incorporate elements such as financial support, infrastructure improvements, childcare solutions, and empowerment initiatives that are specifically tailored to women's needs. Interventions must also be aligned with broader efforts to challenge deep-rooted gender norms and promote an enabling environment for women to have agency and participate in all areas of social, economic, and political life. Further research is needed to improve our knowledge and ensure that interventions not only effectively promote gender parity in educational and economic outcomes, but also significantly improve women's socioeconomic status, agency, health, and overall well-being.

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Appendix: Query Inputted in Scopus

TITLE-ABS-KEY ("female" OR "girl" OR "woman" OR "women" OR "gender") AND TITLE-ABS-KEY ("intervention" OR "program" OR "policy" OR "strategy" OR "initiative" OR "approach" OR "method" OR "project" OR "scheme" OR "design" OR "measure" OR "plan" OR "system" OR "model" OR "tactic" OR "process" OR "model" OR "evaluation" OR "assessment" OR "effectiveness" OR "impact" OR "result" OR "effect" OR "analysis" OR "review" OR "appraisal" OR "consequence" OR "outcome" OR "evidence" OR "role" OR "influence") AND TITLE-ABS-KEY ("teaching" OR "training" OR "tutoring" OR "education" OR "vocational" OR "teacher" OR "instructor" OR "tutor" OR "school" OR "college" OR "university" OR "classroom" OR "development" OR "technical" OR "professional" OR "career" OR "scholar" OR "pupil" OR "learner" OR "student" OR "leader" OR "role model") AND TITLE-ABS-KEY ("equity" OR "equality" OR "parity" OR "empowerment" OR "leadership" OR "gap" OR "discrepancy" OR "difference" OR "divide" OR "score" OR "test" OR "grades" OR "exam" OR "performance" OR "skill" OR "decision" OR "choice" OR "preference" OR "option" OR "socioeconomic" OR "socio-economic" OR "employment" OR "income" OR "occupation" OR "ability" OR "abilities" OR "learning" OR "attitudes" OR "wage" OR "earning" OR "income" OR "pay" OR "financial" OR "social" OR "inclusion" OR "aspirations" OR "expectations" OR "opportunity" OR "opportunities" OR "strength" OR "violence" OR "conflict" OR "discrimination" OR "abuse" OR "aggression" OR "brutality" OR "beliefs" OR "views" OR "perspective" OR "mindset" OR "integration" OR "participation" OR "involvement") AND TITLE-ABS-KEY ("Uganda" OR "Kenya" OR "Tanzania" OR "Nigeria" OR "India" OR "Ethiopia" OR "Ghana" OR "Malawi" OR "Zimbabwe" OR "Zambia" OR "Bangladesh" OR "Rwanda" OR "Cameroon" OR "Pakistan" OR "Burkina Faso" OR "Mozambique" OR "Viet Nam" OR "Benin" OR "Iran" OR "Nepal" OR "Philippines" OR "Jordan" OR "Congo" OR "Lebanon" OR "Cote d'Ivoire" OR "Senegal" OR "Sri Lanka" OR "Tunisia" OR "Democratic Republic Congo" OR "Mali" OR "Gambia" OR "Sierra Leone" OR "Morocco" OR "Algeria" OR "Palestine" OR "Kyrgyzstan" OR "Yemen" OR "Liberia" OR "Haiti" OR "Togo" OR "Myanmar" OR "Niger" OR "Afghanistan" OR "Guinea-Bissau" OR "Cambodia" OR "Micronesia" OR "Bhutan" OR "Guinea" OR "Burundi" OR "Mongolia" OR "South Sudan" OR "Lesotho" OR "Somalia" OR "Angola" OR "Uzbekistan" OR "Madagascar" OR "Timor-Leste" OR "Bolivia" OR "Syrian Arab Republic" OR "Laos" OR "Sub-Saharan Africa" OR "developing countries" OR "developing country" OR "low-income countries" OR "low-income country" OR "developing world") AND PUBYEAR > 1998 AND (LIMIT-TO (SRCTYPE , "j") OR LIMIT-TO (SRCTYPE , "ar") OR EXCLUDE (SRCTYPE , "ECON" OR LIMIT-TO SUBJAREA)) AND (LIMIT-TO (SUBJAREA , "ECON") OR LIMIT-TO (SUBJAREA , "BUSI")) AND (LIMIT-TO (DOCTYPE , "ar") OR LIMIT-TO (DOCTYPE , "re"))