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# Evidence Gap Map- An Analytical Overview of the Education System and Service Delivery in Pakistan

November 26<sup>th</sup>, 2023





## Table of Contents

<b>Introduction.....</b>	<b>2</b>
<b>Methodology for Evidence Gap Mapping Analysis .....</b>	<b>3</b>
<b>Quality Assessment of Studies .....</b>	<b>3</b>
<b>Studies included for international evidence: .....</b>	<b>5</b>
Studies included for evidence from Pakistan: .....	6
<b>Evidence Gap Map.....</b>	<b>8</b>
<b>1- Understanding the learning experiences of individual learners, especially the most marginalised children.....</b>	<b>8</b>
1.1 Girls .....	8
1.2. Children-with-Disabilities.....	32
<b>1.3 - Children from minority groups .....</b>	<b>41</b>
<b>2- Learning Environment.....</b>	<b>44</b>
Diagnostic feedback.....	44
Curriculum and EdTech solutions.....	48
<b>3- Resilient education service delivery.....</b>	<b>56</b>
3.1 Resilience in Education Service Delivery .....	56
3.2 Education system-scaling innovation.....	62
3.3 Accountability and Decentralization .....	67
<b>Bibliography.....</b>	<b>71</b>



## **Introduction**

The importance of education for every child is now well-established through evidence-based arguments and extensive literature on education. It is a well-established fact that quality education has several benefits, including improving learning outcomes, positive youth development, cognitive and socio-emotional development, increasing earnings potentials (Emezue, et al., 2021). Education is established as a right of all children between 5-16 years in Pakistan through the national laws i.e., article 25 A and international commitments such as Sustainable Development Goals 2030. All seven targets of SDG 4 indicate the provision of education that not only prepares individuals for socio-economic mobility but it nurtures the pathways to pursue the goals of equity and equality. Education has strong connections with other outcomes of human development like health and well-being Education has e impact on national growth and development (Hanushek & Woessmann, 2020). Thus, for instrumental reasons as well as for ultimate ends, education for all children is now acknowledged to be a very important goal for all countries.

Pakistan has also been making efforts to improve access, enhance quality and achieve equity goals in education and there has been some success in these efforts as well. But, still, a lot more needs to be done for ensuring every child has access to quality education irrespective of any individual, family, or other contingencies. An estimated 23 million 5–16-year-olds are out of schools (UNICEF, Pakistan). Education quality, for most in-school children, remains poor and our education system remains an iniquitous system where access to quality education is quite dependent on parental/household income, gender, geography, religion, ethnicity, and a host of other factors (UNICEF, 2017<sup>1</sup>). There has been a lot of research, over the last couple of decades, across the world, some of it in Pakistan too, on how to achieve this objective of ensuring quality education for all. Education system in Pakistan needs to benefit from existing research to design effective policies and intervention, while also focusing on filling any research gaps. This review attempts to learn from the literature and identify some of the gaps for Pakistan.

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<sup>1</sup> UNICEF (2017). Situation Analysis of Children in Pakistan by UNICEF & Government of Pakistan.

## Methodology for Evidence Gap Mapping Analysis

This review aims to identify, assess, and synthesise available evidence regarding the impact of educational interventions on children's access to education and learning in Lower Middle-Income Countries (LMICs) including Pakistan. The goal is to evaluate existing gaps in the current literature, including the absence of evidence or reliance on outdated information. The primary objective of this undertaking is to identify evidence specific to the context of Pakistan as well as the current evidence gap in the literature on LMICs. The following two questions were considered for each of the priority themes identified:

1. What are the effects of different education interventions on enrolment, attendance, dropout rates, completion, and learning outcomes for primary and secondary school-age children in low-and middle-income countries?
2. What are the contextual barriers to, and facilitators of, the effectiveness of educational interventions?

### Quality Assessment of Studies

This is not a systematic or rigorous review of evidence. It can be classified as a rapid scoping of evidence and therefore, strict inclusion and search conditions have not been followed. However, this review has adopted conditions for the inclusion of research that can be considered of high quality. This assessment is based on the BE2 assessment of quality of evidence and mainly included a focus on the conceptual framing, transparency, appropriateness, cultural sensitivity, validity, reliability, and cogency (see Table 1 below).

Table 1: Principles of Research Quality

Principles of quality	Associated questions
<b>Conceptual framing</b>	Does the study acknowledge existing research?
	Does the study construct a conceptual framework?
	Does the study pose a research question or outline a hypothesis?
<b>Transparency</b>	Does the study present or link to the raw data it analyses?
	What is the geography/context in which the study was conducted?
	Does the study declare sources of support/funding?
	Does the study identify a research design?
	Does the study identify a research method?

<b>Appropriateness</b>	Does the study demonstrate why the chosen design and method are well suited to the research question?
<b>Cultural sensitivity</b>	Does the study explicitly consider any context-specific cultural factors that may bias the analysis/findings?
<b>Validity</b>	To what extent does the study demonstrate measurement validity?
	To what extent is the study internally valid?
	To what extent is the study externally valid?
	To what extent is the study ecologically valid?
<b>Reliability</b>	To what extent are the measures used in the study stable?
	To what extent are the measures used in the study internally reliable?
	To what extent are the findings likely to be sensitive/changeable depending on the analytical technique used?
<b>Cogency</b>	Does the author 'signpost' the reader throughout?
	To what extent does the author consider the study's limitations and/or alternative interpretations of the analysis?
	Are the conclusions clearly based on the study's results?

A specific criterion to assess the quality of an individual study was the methods it used – all studies that used experimental and quasi-experimental methods were classified to be of high quality and included in the review. Additionally, studies that have used mixed-methods approaches or high-quality publications from reliable authors and sources were also considered to be of medium-high quality and were included in the review (specifically to include evidence on Pakistan which is more limited). Based on a rapid assessment of study titles/abstracts as 'high', 'medium' or 'low' (see Table 1 below), only studies classified as high or medium quality are discussed within this review.

Table 2: Quality rating of individual study

<b>Study Quality</b>	<b>Definition</b>	<b>Decision</b>
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High	Comprehensively addresses multiple principles of quality	Included in review
Medium	Some deficiencies in attention to principles of quality	Included in review
Low	Major deficiencies in attention to principles of quality	Excluded

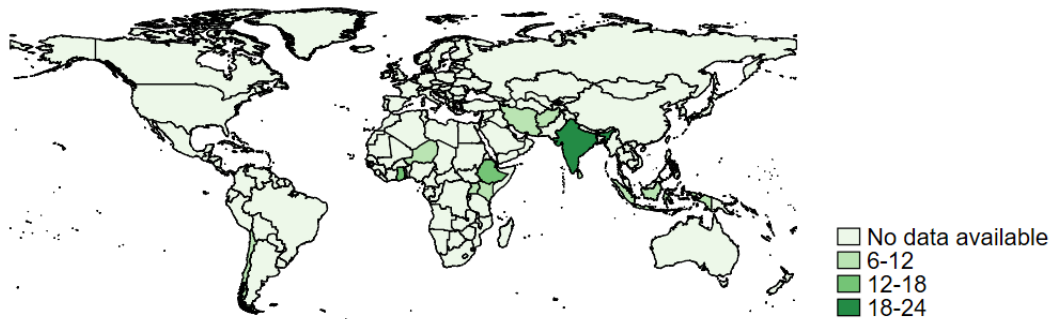
Quantitative evidence from impact evaluations of education interventions was identified, assessed, and synthesised. Additionally, studies were considered that used experimental and quasi-experimental study designs, impact evaluations, and studies that may allow to measure correlation of various factors with various student learning outcomes. A selection criterion was developed where only those studies were included where the research objective focused on assessing the effectiveness of a specific technique, technology, treatment, procedure, or service under controlled conditions rather than addressing questions relevant to large-scale programme implementation. The study considered whether the participants are selected, potentially limiting the generalizability of results due to strict inclusion and exclusion criteria. It also examined whether the intervention is primarily administered by the research study team rather than trained non-expert individuals and whether the delivery of the intervention is closely monitored and supervised to ensure treatment adherence. Furthermore, the study assessed whether concurrent interventions are restricted to the study population to attribute observed effects to the intervention of interest.

Given the lack of robust literature on specific education related issues in Pakistan, the scope of this review was expanded to include studies that adopt mixed methods approach in Pakistan rather than narrowing the scope to those studies that focus on experimental and quasi-experimental designs alone. This allows us to include some, high quality evidence from Pakistan which would otherwise not be included if the scope were limited to only experimental studies that focus on measuring impact.

Multiple search engines, including Google Scholar, Scopus, ERIC and the University of Sussex's library search portal, and the standard Google search engine, were employed in this research. The study involved searching the websites of eleven networks and multilateral agencies, along with scanning the websites of prominent NGOs for the period starting from 2000 onwards. The Pakistan-specific evidence was sourced through expert views on what some of the key literature on the specific themes has been in the last two decades which may help shape the debate under each of the proposed themes.

**Studies included for international evidence:**

Figure 4: Distribution of studies for international evidence



Note: International evidence only excluding Pakistan

Figure 4 shows a spread of studies across the world, and a total of 302 studies in this review that were restricted to a 23-year period (2000-2023) from the international evidence. Figure shows that the international evidence was derived from across the globe. This ensured inclusion of a large enough set of international studies with rigorous experimental and quasi-experimental study designs.

Figure 5: Distribution of international evidence by region

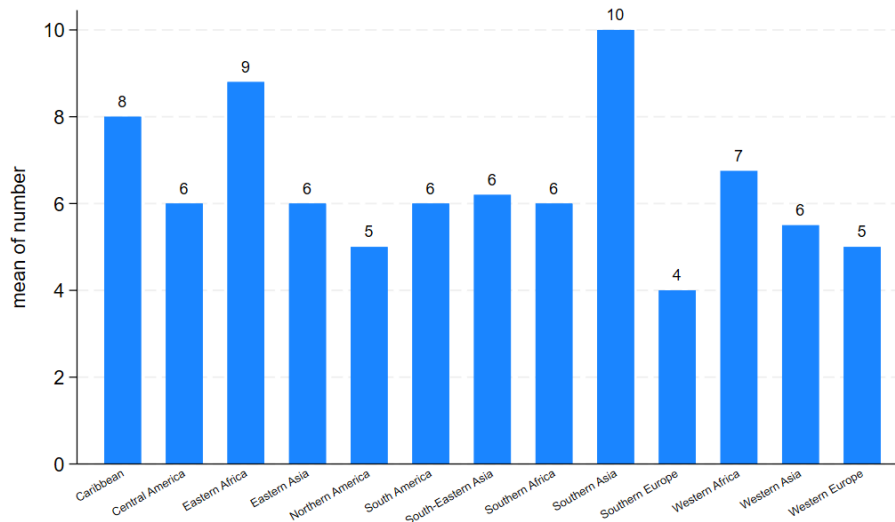


Figure 5 shows that the highest frequency of international evidence was taken from South-East Asia to ensure proximity to the Pakistani context.

**Studies included for evidence from Pakistan:**



Since there is lack of rigorous experimental and quasi-experimental evidence from Pakistan, the inclusion criteria were relaxed and was extended to include recent studies from Pakistan that may cover the themes being discussed.

It is worth noting that this review is a rapid scoping of evidence and by no means claims to cover the entirety of the vast body of evidence that exists internationally.



## Evidence Gap Map

### 1- Understanding the learning experiences of individual learners, especially the most marginalised children

#### 1.1 Girls

##### A. Better access to improved schools

This analysis focuses on the impact of new school interventions and school infrastructure improvements in LMICs on educational outcomes. These interventions are designed to address disparities in educational access, quality, and outcomes in underserved areas.

##### International evidence:

Table 3: Summary of evidence on access to improved schools

Sub-categories	Number of studies considered	Study Design	Outcomes considered
Hygiene infrastructure interventions	2	1. Cluster RCT 2. Quasi experimental with simple differences	1. Attendance (including attending an exam) 2. Enrolment 3. Dropout
Construction of new schools	1	1. Quasi experimental with simple differences	1. Attendance (including attending an exam) 2. Enrolment 3. Learning
Improvement/ replacement of school infrastructure	4	1. Cluster RCT 2. Quasi experimental with simple differences	1. Attendance (including attending an exam) 2. Enrolment 3. Learning 4. Completion

7 studies from ten different papers, published between 2002 and 2023, were included in this analysis.

These studies assessed the effects of new schools and school infrastructure programmes in L&MICs. Four studies employed cluster-randomised control trials from India (Borkum et al., 2012); Afghanistan

(Burde & Linden, 2011, 2013); Niger (Freeman et al., 2012) and Kenya (Dumitrescu et al., 2011), two used difference-in-differences analysis from India (Adukia, 2017) and rural Georgia (Lokshin & Yemtsov, 2004), and one combined cluster RCT and pre-post methods in rural Bolivia (Newman et al., 2002). These studies adopted interventions that fall into three sub-categories: hygiene infrastructure interventions (Adukia, 2014; Freeman et al., 2012), community-based school establishment (Burde & Linden, 2013; IMAGINE programme), and school infrastructure improvement or replacement (Borkum et al., 2013; Lokshin & Yemtsov, 2004; Newman et al., 2002). Five studies focused on enrolment rates, six on attendance, two on dropout rates, and two on completion rates, with data contributed by various authors (e.g., Burde & Linden, Newman et al., Lokshin & Yemtsov, Freeman et al., Borkum et al., and Dumitrescu et al.).

### **Evidence from Pakistan:**

Pakistan has made significant investments in infrastructure improvements, for schools, over the last few decades. These have included construction of more rooms, boundary walls and gates, bathrooms and provision of safe drinking water and electricity. We do not have, through rigorous studies, evidence of the impact of these improvements except the study conducted by Barrera-Osorio et al., 2022 where they find a significant increase in test scores because of 200 new schools that were opened in Sindh, Pakistan.

However, there is high quality research in Pakistan that shows how public investments in secondary education in the country have facilitated girls' education, thereby increasing the supply of women teachers. The study by Andrabi et al. (2013) use instrumental variable methods to show how the construction of government secondary schools in Pakistan facilitated future education provision by decreasing the cost of schooling and generating a pool of potential teachers or as the authors state '...the students of today become teachers of tomorrow' (p.1). This paper is a critical piece of evidence from Pakistan that showcases the critical value of schooling access, especially for girls, and the resultant impact of generating a pool of educated students who are potential teachers – a means of improving future education provision in the country.

Another way of framing the discussion on access to schooling in Pakistan is by focusing on 'distance to schools' i.e., examine how reducing distance to school (and thereby improving access) can contribute to improvements in the education system. A high-quality experimental study by Carneiro et al. (2022) in rural Punjab shows that a critical determinant of 'school choice' in their sample settings is the distance to school. The authors note that a 500-metre increase in distance decreases the chance that a school is chosen by 11.1 percentage points by girls and by 6 percentage points for boys. Even more interestingly, parents are willing to pay more than a full year of private school fees (\$13) for a 500-metre reduction in distance and for girls their willingness to do so is 74% of annual school fees. This is a critical finding of this paper and suggests that distance is a very important factor in determining the type of school, parents choose in Pakistan for both boys and girls.

Other, non-experimental studies, in Pakistan have also noted the importance of ‘distance to school’ in determining access to schooling, especially for girls. A mixed-methods evaluation of an adolescent girls’ programme (Rawal et al. 2020) – the *Siyani Saheliyan* programme<sup>2</sup> (implemented in Muzaffargarh, Rahim Yar Khan and Bahawalpur) – found that access to schools, cultural norms and financial constraints were some of the key factors preventing girls from accessing schools in these districts. Interventions that aimed to address these challenges – specifically reduce the distance to school by providing safe transport facilities to girls were acknowledged by stakeholders as being critical in allowing girls to attend schools and complete the interventions. Similar findings were noted in an evaluation of the Sustainable Transition and Retention in Delivering Education STRIDE programme where focus group discussions with beneficiaries of transport facilities found that many would not have been able to continue their education without the reduction in travel times associated with the provision of transport.

**Discussion:**

New school interventions and school infrastructure enhancements have the potential to positively influence educational outcomes in L&MICs. These interventions aim to reduce educational barriers by providing clean water, sanitation, and girls’ restroom facilities while improving accessibility and attracting qualified teachers. This can lead to increased enrolment, reduced absenteeism, and improved learning experiences, with a focus on mitigating dropout rates, particularly among girls. However, the effectiveness of improving existing infrastructure remains inconclusive due to limited available data, emphasising the need for further research in this area. (Adukia, 2014 ; Borkum et al., 2012 ; Burde & Linden, 2011, 2013 ; Freeman et al., 2012 ; Dumitrescu et al., 2011 ; Lokshin & Yemtsov, 2004 ; Newman et al., 2002). In Pakistan, we do have some evidence to suggest that improvements in schooling access and reducing distance to school can be useful interventions especially for girls.

Table 4: Summary of impact of better access to improved schools’ interventions

Priority area	What has worked	What is unknown	Priority Issues	Possible Interventions
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<sup>2</sup> Siyani Saheliyan is a 2.5 million GBP DFID-funded programme (part of the Punjab Education Support Project, PESP II) that has been implemented in selected districts of Southern Punjab. The Siyani Saheliyan (SS) programme aims to offer a ‘second chance’ to out-of-school adolescent girls by targeting 20,000-22,000 of the most marginalised adolescent girls who have either dropped out of school with little or no learning or who may have never enrolled in school. These girls are supported for access, completion and transition over a twenty-six-month intervention period through developing their functional literacy/numeracy and vocational skills. The programme ran from 2018-2020.



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<p>Increased access to improved schools</p>	<p>Hygiene improvement, infrastructure and construction of new schools has a positive effect on student attendance and test scores</p>	<p>Impact of improvement of existing school infrastructure</p>	<p>Improving school infrastructure in Low- and Middle-Income Countries (L&amp;MICs) is crucial for enhancing educational outcomes, especially for girls</p>	<p>Invest in building new schools and upgrading school infrastructure, with a focus on hygiene and girls' restroom facilities, to reduce barriers to education and improve accessibility.</p>
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## B. Flexible approaches to adolescent girls' education

### International evidence:

Table 5: Summary of interventions on flexible approaches to adolescent girls' education

Sub-categories	Number of studies considered	Study Design	Outcomes considered
General awareness campaigns	8	1. Cluster RCT 2. Quasi experimental with simple differences	Multiple outcomes including self-efficacy, decision making, child marriage, communication and aspirations
Employability trainings	3	1. Cluster RCT 2. Quasi experimental with simple differences	
Safe spaces for girls	4	1. Cluster RCT 2. Quasi experimental with simple differences	
Financial education	5	1. Cluster RCT 2. Quasi experimental with simple differences	
Peer groups	6	1. Cluster RCT 2. Quasi experimental with simple differences	

A total of 19 studies examined 18 programmes between 2005 till 2013, offering sufficient insights into the implementation of flexible strategies for educating adolescent girls.

These programmes encompassed a variety of interventions, such as combining life skills education with livelihood training or academic tutoring with empowerment groups. These programmes are called multicomponent programmes. Eight studies made a comparison between a single-component programme and a multicomponent which included running several alternate approaches for example, a programme that includes both life skills education and livelihoods training or a catch-up programme

where participants both receive academic tutoring and participate in empowerment groups bundled together. The studies were conducted between 2005 till date and were conducted in Bangladesh (Amin & Suran, 2005; Scales et. al., 2013); Kenya and Uganda (Austrian & Muthengi, 2012); South Africa (Hallman & Roca, 2011); Jordan (Groh et.al., 2012); Zimbabwe (Hallfors et. al., 2011); Ghana (Montgomery et. al., 2012) and Nicaragua (Peña et.al., 2008).

Among them, five studies (Amin & Suran, 2005; Austrian & Muthengi, 2012; Hallman & Roca, 2011; Hallfors et. al., 2011; Peña et.al., 2008) reported stronger outcomes in the multi-component approach, while three (Scales et. al., 2013; Groh et.al., 2012; Montgomery et. al., 2012) found no significant difference between the multicomponent and single-component arms.

Of these five studies that favoured the multi-component approach, four (all of which were of medium or high quality) focused on changes in behaviour, including aspects related to work, violence, school, or marriage, rather than changes in knowledge. Conversely, one low-quality study solely examined changes in gender attitudes. The three studies that did not identify a distinction between the two approaches were of medium to high quality (Haberland, McCarthy & Brady, 2018). It is noteworthy that, in all instances where a statistical comparison was made between the study arms, the multi-component approach outperformed the single-component one.

Furthermore, three of the studies evaluated outcomes over extended follow-up periods, but only one of them showed greater durability in the effects of the multicomponent approach for certain outcomes. This collective evidence suggests that multi-component programmes tend to outperform single-component programmes, although it's important to note that there are limitations due to the small number of studies available for analysis, and a significant portion of these studies (four out of the eight) were not considered high quality. Box 1 below summarises recent, mixed methods, evidence from an independent evaluation of the Girls' Education Challenge (GEC). Whilst this evaluation does not use experimental or quasi-experimental methods, it uses simple descriptive techniques as well as qualitative methods (Rivers of Life specifically) to explore the perspectives, agency, and choices of younger and older marginalised adolescent girls to understand how education pathways beyond formal schooling have met their needs and increased their opportunities in education and beyond.

**Box 1: Evidence from the Girls' Education Challenge: Education Pathways for Marginalised Adolescent Girls Beyond Formal Schooling**

The Girls' Education Challenge (GEC) was launched by FCDO in 2012 as a 12-year commitment to reach the most marginalised girls globally and is the largest global fund dedicated to girls'

education. The extensive research generated under this programme also offers insights into this theme.

The Girls' Education Challenge Phase II (GEC II) portfolio includes a focus on Leave No Girl Behind (LNGB), which aims to reach up to 230,000 highly marginalised girls, providing them with literacy and numeracy opportunities, as well as skills relevant for life and work. The 14 LNGB projects operate in 10 countries across Africa and South Asia. The projects provide “education pathways beyond formal schooling”.

An Independent evaluation of some of the programmes that focus on education opportunities accessed by adolescents who have never been to school or dropped out early has recently been published (see Rose et al. 2023). The evaluation focuses on support received by adolescent girls in areas including foundational literacy and numeracy; skills and livelihoods; empowerment, agency, and rights; sexual and reproductive health and rights; community-based awareness-raising and advocacy; and systems-level capacity building and advocacy.

Evidence from the evaluation of programmes in three contexts – Ghana, Kenya and Nepal – find that:

- **Programs that provide a range of support to marginalised girls succeeded in improving literacy and numeracy outcomes as well as girls' confidence and decision-making power.** Girls identified that their engagement in decision-making had enhanced due to greater confidence related to improvements in literacy, numeracy, and life skills. However, there appears to be variation in the types of decisions they were now able to make themselves. A larger proportion of girls reported being able to make decisions over their day-to-day lives, such as household expenditure, or to visit the market/ health clinic/ friends. A smaller proportion were able to make decisions over their education, marriage, and income-generating activities with husbands or other family members retaining decision-making powers, particularly for younger girls.
- **The material and financial support provided by projects was identified as a critical determinant in reducing financial barriers to accessing school** (the share of girls identifying economic costs as a barrier to participating in education fell from around half before their enrolment in the LNGB project to around one-fifth when participating in the LNGB project).

- Additionally, **the provision of hygiene and dignity kits** (e.g., soap, sanitary pads, etc.) **were beneficial in the three case study projects**, alongside menstrual hygiene management information provided during the life skills sessions. These were identified as particularly important in mitigating barriers to attending the learning centres during girls' menstrual cycles.
- **Engagement with parents and community members to sensitise them to the importance of girls' education was also found to be important.** These included door-to-door campaigns as well as media campaigns by locally recruited community members. In addition to encouraging families and community members to educate girls, they also spread awareness on delaying early marriage and pregnancy. The engagement of community religious leaders was also identified as important.

### **Evidence from Pakistan:**

While there is no rigorous experimental evidence on flexible educational programmes and/or life skills programmes for girls from Pakistan, a study conducted by Jehangir and Mankani (2016) *Situation Analysis of Children in Pakistan* by UNICEF & Government of Pakistan, 2017 showed positive impact of life-skills programmes on girls' education in Pakistan.

The *Siyani Saheliyan programme* (mentioned above) provides an example of targeted interventions in Pakistan that have aimed to support out of school adolescent girls (either those who have never been enrolled in school or who dropped out due to disability, early marriage or child labour etc.) in rural areas of Southern Punjab through bridging programmes and technical, vocational and education training and enterprise development in highly challenging contexts (specifically Muzaffargarh, Rahim Yar Khan and Bahawalpur). This programme comprised of three strands: remedial/accelerated learning/bridge programmes, skills/livelihoods and financial literacy and the provision of Life Skills Based education. A mixed-methods evaluation of this programme by OPERA (2020) found that the package of interventions provided to highly marginalised girls resulted in significant improvements in their learning outcomes in literacy and numeracy. There was also compelling evidence that the provision of transport facilities to girls was a critical determinant in their continued access and attendance at the Hubs where classes were held. The parental information sessions that were run regularly and were well attended were noted by all interviewed stakeholders to have been crucial in parents sending their girls to school. Specifically, interviewed stakeholders noted the critical role of programme staff in raising awareness about this programme and encouraging parents to attend it and suggested that providing such sessions to the girls themselves and perhaps even to the wider community could be a useful means of improving girls' outcomes.



**Box 2: Evidence from two GEC programmes in Pakistan: adopting a multipronged approach to reach the most marginalised girls**

The GEC has two projects in Pakistan, both of which are funded under the Leave No Girl Behind (LNGB) funding window. The areas of Pakistan in which the projects are operating are subject to extreme poverty and parents find it difficult to meet education-related costs.

ACTED is implementing the ‘**Closing the Gap**’ project in Sindh and Khyber Pakhtunkhwa (KPK). In KPK the net enrolment rate for girls is 51 percent, considerably lower than that for boys (79 percent). In Sindh, ACTED is working in some of its poorest communities in Jacobabad and Kashmore. Here, 52 percentage of the poorest children (58 percentage girls) are out of school.<sup>1</sup>

**TEACH** is being implemented by IRC in Balochistan. In Balochistan, school enrolment rates are low, especially for girls from poor households: 78 percent of girls are out of school.<sup>2</sup> These projects aim to provide learning opportunities to adolescent girls who have never been to school or dropped out before they completed primary education.

These two programmes offer accelerated learning programmes to help younger girls (10 to 14 years old) catch up and transition into formal education where possible, and programmes for older girls (15 years and older) to gain literacy, numeracy and life skills.

The Closing the Gap project supports over 5,000 out-of-school girls, aged from 10 to 19 years. IRC’s TEACH project supports up to 29,000 out-of-school girls. Both projects aim to reduce the socio-cultural barriers to girls’ education that arise within schools, families, communities and systems. Settlements in these areas are often remote and hard to reach, and these communities tend to have conservative attitudes towards gender norms, including education for girls and women. The projects are addressing these by engaging girls, family, community and schools in all project activities.

The interventions adopted by these programs have shown success in reaching highly marginalised adolescent girls in these locations. Specifically:

- **The projects have improved access by ‘creating safe learning spaces for girls’** – for example, ACTED’s ‘Closing the Gap’ project, reported in their endline evaluation for their cohort that 2,100 learning spaces were created in Sindh and 48 in KPK. Through their

Accelerated Learning Programme, girls are helped to achieve literacy and numeracy targets. From baseline to endline, the aggregate average score of GEC learners in English literacy has increased by 39.3 percentage points. On EGRA for Sindhi language, it has increased by 55.1 percentage points and on numeracy, the overall average increase is by 69.4 percentage points. The programme is now being scaled up through the Sindh Education Foundation to ensure access for more girls.

- **The projects have successfully leveraged technology to tackle barriers to learning for marginalised girls.**
- **They have campaigned and raised awareness on gender equality and social inclusion** through engaging extensively with men and boys. For example, TEACH built community support by reaching out to Village Support Groups and caregivers through learning facilitators, radio messaging, IEC materials, mentors and community mobilisation staff. Mentors' sessions with girls and caregivers resulted in increased confidence, enhanced communication skills and identification of girls' safety risks. Settlements in Balochistan are often remote and communities tend to have conservative attitudes towards gender norms, including education for girls and women. TEACH used radio, TV and face-to-face sessions with men and boys in Balochistan. Radio programmes included stories and dramatisations on the importance of girls' education. Talk shows with successful women in Balochistan raised awareness of safeguarding and GESI issues.

Source: The excerpt above draws extensively on:

[tec\\_country\\_briefing- pakistan october-22 final.pdf \(girlseducationchallenge.org\)](https://www.girlseducationchallenge.org/tec-country-briefing-pakistan-october-22-final.pdf)

## Discussion:

Despite the initial inclusion of a considerable number of programme evaluations for adolescent girls in low- and middle-income countries, the research landscape reveals a striking lack of studies specifically addressing implementation questions. Moreover, methodological constraints in many of the studies have left numerous questions unanswered. As stakeholders contemplate the replication, expansion, and scaling of girl-centred programmes or the initiation of new pilot innovations, there is a pressing need to understand both what is effective and, equally crucial, what isn't, which remains largely unexplored due to these evident evidence gaps. Nevertheless, some recent evaluations have shed light on what interventions can work globally and there is compelling evidence of the pathways through which change can be achieved in the context of Pakistan. However, more evidence of this nature across other locations would be needed to allow us to better understand the pathways of change even within Pakistan.

Table 6: Summary of effectiveness of alternate programmes

Sub-categories	What has worked	What is unknown	Priority Issues	Possible Interventions
Flexible approaches to adolescent girls' education	A package of interventions relative to single component of programme and longer exposure contribute to greater intended results for girls	Impact of multicomponent programmes where the exposure is shorter. External validity and cost effectiveness of these programmes	Designing cost-effective approaches to reduce barriers to adolescent girl'' education and employment opportunities	Short term multi-component programmes that combine life skills education with livelihood training and empowerment groups to enhance the overall education experience for adolescent girls

### C. Further reducing the cost of education

#### International evidence:

Table 7: Summary of evidence on further reducing school fees

Sub-categories	Number of studies considered	Study Design	Outcomes considered
School feeding programmes	10	1. Cluster RCT 2. RCT using fixed effects regression 3. Quasi experimental with simple differences	1. Attendance 2. Maths test scores 3. Enrolment 4. Completion
Merit-based scholarships	11	1. Cluster RCT 2. Quasi experimental with simple differences	1. Attendance 2. Maths test scores 3. Enrolment 4. Completion
Reducing fees	9	1. Cluster RCT 2. Quasi experimental with simple differences 3. Regression discontinuity	1. Attendance 2. Educational attainment (no of years of schooling) 3. Enrolment 4. Completion

For this sub-theme, studies on school feeding programmes, merit-based scholarships, and reducing fees were considered.

### **School feeding programmes:**

For the impact of school feeding programmes, 10 studies were included that were reported in 21 different papers that evaluated the effect of a school feeding intervention. The studies were a mix of experimental and quasi-experimental studies conducted between 2012-2015.

The reviewed studies encompassed a variety of education outcomes, with a primary focus on achievement outcomes in maths and numeracy (McEwan, 2013; Kleiman-Weiner et al., 2011; Kazianza et al., 2013; Diagne et al., 2014; Omwami et al., 2011; Ismail et al., 2012; Adroque et al., 2011). Additionally, eight studies examined literacy and language arts outcomes (McEwan, *ibid*; Adroque et al., *ibid*; Tan et al., *ibid*; Omwami et al., 2011; Diagne et al., 2014; Ismail et al., 2012; Powell, *ibid*; Jacoby et al., *ibid*). Overall, the available evidence suggests school feeding programmes may improve school participation and learning outcomes in some contexts. The large effects reported in some contexts suggest school feeding has the potential to improve primary-age children's school attendance, the outcome where it saw the most consistent positive effect across different contexts, as well as learning.

### **Merit-based scholarships:**

11 studies were included in this evidence gap analysis that were reported in ten different papers that evaluated the effects of a merit-based scholarship or incentive intervention using either cluster randomised trials or RCTs using a difference-in-differences approach between 2010 and 2015.

Merit-based scholarships aim to improve learning outcomes by rewarding high-performing students with scholarships or one-off cash payments to continue their studies (McEwan, 2013; Berry, 2015).

Evaluated education incentive programmes used cash-based rewards and featured varied structures, including direct payments to individuals or schools (Kremer et al., 2008). These programmes include studies conducted by Li et al., 2014; Kremer et al., 2009; Behrman et al., 2000; Blimpo et al., 2014. Some programmes focused on facilitating students' progression to the next education level, and others extended incentives to group-level outcomes (Berry, 2013; Blimpo et al., 2010). The Fall Challenge Programme rewarded improvement in low-achieving students' scores, benefiting both high- and low-achieving students simultaneously (Li et al., 2014). Overall, the evidence suggests children receiving merit-based scholarships benefit from an improvement in test scores on average, with potential for improvements that are relatively large in magnitude, as was observed in the peer incentives programme in China and the merit-based scholarship programme in Cambodia in particular. More research is needed to identify the programme components that may produce such large effects and whether these effects can be replicated in different contexts.

### **Reducing fees:**

A total of nine studies were included that evaluated the effects of programmes that reduced school user fees between 2009 till 2016.

Review of studies done for this evidence gap map analysis suggests that there are three different means that programmes in the included studies use to reduce user fees: eliminating school fees, reducing school fees, and removing other costs (for example, the cost of uniforms).

These refer to nine unique programmes. All nine of the included programmes involve some form of school fee reduction or elimination. These include reductions of costs such as tuition fees, and school uniforms, as well as indirect costs such as contributions to Parent Teacher Associations and field trips. Seven studies compared the intervention to business as usual (Hidalgo et al., 2013; Grogan, 2009; Gajigo, 2012; Barrera-Osorio et al., 2007; Kharisma, 2016; Edmonds & Shrestha, 2014). In South Africa, Garlick (2013) evaluated fee elimination by comparing schools below and just above the 'poverty score' cut-off, while Evans et al. (2014) conducted a study in Kenya using a within-school comparison. Synthesis of the evidence suggests that there is a large amount of heterogeneity, suggesting substantively different effects in different contexts and hence there is a lot of robust evidence gap that exists in concluding if reducing cost can lead to better educational outcomes. Box 1 above also presents compelling evidence based on a mixed-methods study in Ghana, Kenya and Nepal that reducing costs to accessing school for marginalised adolescent girls can be an effective means of improving their education outcomes as well as their transition into work-related opportunities.

### **Evidence from Pakistan:**

Pakistan has rich experience of running scholarship and/or cash transfer programmes for students, especially girls. Government schools have no tuition fee in Pakistan. Governments have also been running stipend programmes especially in less-developed districts and areas (Khyber Pakhtunkhwa girl stipend programme), conditional cash-transfer programs (CCTs) like *Zewar-e-taleem* (Punjab) and BISP's *Waseela-e-taleem* (across Pakistan) and scholarship programmes (Punjab Education Endowment Fund (PEEF)). Education foundations, especially in the Punjab and Sindh, have rich experience in running voucher schemes, as well as other forms of private-public partnerships (PPPs). Only a few of these programmes have been rigorously evaluated.

An evaluation of the Punjab Educational Endowment Fund (PEEF) has found that the PEEF scholarship scheme in the Punjab has proven to be successful – it has reached more than 60,000 pupils since its inception in 2008 and expanded beyond Punjab to cover other provinces and regions of the country. The final impact assessment report on PEEF noted that the programme was highly successful in reaching families facing multiple educational and social disadvantages and the scholarships made a real difference to students' lives. An evaluation of the PEEF intermediate scholarship that targeted

girls in 11 priority districts (see Bari et al. 2019), found the DFID funded element of the PEEF scholarship to be ‘effective’ and ‘efficient’. Specifically, the evaluation found that, based on a sample of 1000 beneficiaries (from a total of over 25,000), over 98.5% of the scholarship recipients had completed their intermediate studies, 96% of them within two years; 75% of those completing their studies had received examination scores in the top division. The evaluation further found that over 73% of the beneficiaries had gone on to complete higher education and in this regard the scholarships had ‘had a positive impact’ (p. 4). Over 70% of the respondents also reported that the scholarships positively influenced their life outcomes and the way in which family and peers perceived them; 97% believed it had changed their prospects with 34.5% reporting that they would have been unable to continue their intermediate studies without the scholarship.

An impact evaluation of the Benazir Income Support Programme (BISP) examined specifically the impact of this unconditional cash transfer (UCT) on child labour and educational outcomes. Using a regression discontinuity design, the study by Churchill et al. (2021) finds that UCTs have a positive and statistically significant impact on school enrolment and grade promotion, but no impact on school dropout rates in the short run. The study finds that the BISP policy intervention increased grade promotion amongst boys but not amongst girls. In the short run, the BISP substantially reduced dropout for boys but increased it substantially for girls. With regards to child labour, the study found that the BISP policy intervention had no impact on child labour in the short run; but in the medium to long run, cash transfers were found to help to reduce child labour amongst boys as well as girls. In the short run, however, the BISP increases child labour amongst girls but not boys. Therefore, there seems to be mixed evidence in terms of educational outcomes and there are differences by gender.

An evaluation of the BISP by OPM (Cheema et al. 2016) noted that the BISP cash transfer component did not increase the proportion of children (both boys and girls) attending school and whilst the beneficiaries recognised the importance of education in terms of improving children’s life outcomes, the evaluation found that despite the cash transfer, costs to education remained a significant barrier to children’s education. The evaluation also notes that when faced with financial constraints, households in their evaluation showed a preference for boys education and that the unconditional cash transfer element of BISP was not enough to mitigate the significant impact of supply side constraints to accessing schooling (including a shortage of schools for girls especially in remote areas, a shortage of and high absenteeism amongst teachers, a lack of qualified and trained teachers, missing facilities etc.).

Another programme that has been rigorously evaluated in Pakistan is the Punjab Female School Stipend Programme. The study by Chhabra et al. (2019) examines a conditional cash transfer (CCT) programme which targets cash transfer explicitly based on gender and location and implicitly through age and household economic status. This programme was initiated by the government in 2004 and offered households cash benefits which were tied specifically to girls’ regular attendance to secondary grades in government schools in districts with low adult literacy. This programme has been evaluated numerous times using different sources of data over time and the evaluations have tended to show mainly significant, positive effects of the CCT on girls’ secondary enrolment (e.g. Chaudhury et al. 2010). The study by Chhabra et al. is unique in that it covers a much longer period. Using regression discontinuity design, the study finds that the stipend programme had positive effects on girls’

secondary school enrolment throughout the period being examined. More specifically, the study suggests that these findings are consistent with the stipend catalysing shifts in social norms around girls’ education. Greater exposure to households and communities to girls’ secondary education in the early years of the programme induced by the economic benefit may have created a positive and durable change in the ‘taste’ for girls’ secondary education which, in turn, shifted social norms (p. 6).

**Discussion:**

While there is evidence that different sub-categories of interventions improve educational outcomes of children within LMICs, there is a high degree of heterogeneity and review of studies suggest that impact of interventions are dependent on the context of the study site. Pakistan already has a large number of cash transfer programmes and there have been some very high-quality evaluations of some of these programmes, future research is needed on understanding the impact of school feeding programmes and merit-based scholarships within Pakistan specifically in areas which are either economically poor or which were affected by recent floods.

Table 8: Summary of impact of further reducing school fees interventions

Sub-categories	What has worked	What is unknown	Priority Issues	Possible Interventions
School feeding programmes	School feeding interventions improve outcomes related to attendance	Externally valid impact on nutritional status or in contexts which were affected by food shortages or schools with weak	Further research on impact of school feeding programmes in economically poor areas or areas hit by a calamity	School feeding programmes in areas that have been affected by floods or natural disasters due to climate change such as rural Sindh

institutional capacity				
Merit-based scholarships	Children receiving merit-based scholarships benefit from an improvement in test scores on average, with potential for improvements. But results are context dependent	Externally valid programme components which can lead to large effects on outcomes like cognitive, language and art scores	Further research on outcomes including cognition, qualitative skills of arts and language	Large scale study of providing merit-based scholarships aiming to improve language and arts scores
Reducing fees	Weak evidence related to the impact of reducing fees on educational outcomes considered. Results were contexts driven and muted	Externally valid evidence on whether reducing fees can lead to better outcomes	Research on most effective programme to reduce opportunity cost to attend school specially for girls	Whether reducing fees within the context of Pakistan can lead to better outcomes

**D. Wider education benefits: improving girls' non-cognitive outcomes through education**

**International evidence:**

Table 9: Summary of evidence on wider education benefits

Sub-categories	Number of studies considered	Study Design	Outcomes considered
Providing information	4	1. Quasi experimental with simple differences	Educational attainment
Providing learning spaces	5	1. Quasi experimental with simple differences	Agency and choice



### **Providing information:**

**Four** studies were included that evaluated the effects of providing information to children and/or their parents, with each study referring to a unique programme between 2008 and 2020.

Inspiring children about the potential future benefits of education in terms of income, employment, and social status are thought to increase school participation, enrolment, and continuation whereas students underestimate the actual returns to education (Nguyen, 2008). A review of such programmes suggests that this typically involves providing information to the students, and in some cases, their parents, about future potential returns to schooling (Rothan et.al., 2010; Atherto et.al., 2009; Papageorge et.al., 2020).

### **Providing learning spaces:**

**Five** studies conducted between 2012 and 2023 were included to study how providing learning space can impact agency and choice.

Emerging evidence indicates that complementary learning spaces, such as NGO programmes and girls' clubs, effectively promote discussions on gender equality, boost self-confidence, and mitigate risky behaviour. For instance, Murphy-Graham's study in rural Honduras and Uganda (2014) found that an NGO-run secondary education programme empowered young women, enabling them to express opinions, speak publicly, and negotiate domestic matters. Bandiera et al. (2012) observed that girls' club participation delayed marriage and childbirth, enhanced the ability to refuse unwanted advances, and increased engagement in self-employment activities. Girls' clubs also improved knowledge about issues like sexual violence and reproductive rights (Parkes et al., 2013; Unterhalter and Heslop, 2012), although success may depend on local contexts. A clear evidence gap exists in understanding how agency and choice can improve educational outcomes.

However, the recent GEC evaluation (Rose et al. 2023) cited in Box 1 above provides convincing, albeit mixed-methods, evidence on how a package of interventions focusing on improvements in literacy and numeracy combined with the provision of safe spaces and targeted campaigns to create awareness amongst parents and communities can also improve girls' agency and choice. However, it is worth noting that this evaluation has found that whilst these interventions improved marginalised adolescent girls' agency and decision-making on the more day-to-day decisions (e.g., household expenditure and visit to the market), their ability to make decisions on bigger life choices – education, marriage, income generating activities etc. – remained under their husband or other family member's control.

**Evidence from Pakistan:**

We do not have any knowledge of such programmes or their evaluations in Pakistan.

The evidence cited above from the TEACH and ‘Closing the Gap’ projects (both GEC projects in Pakistan) suggests that a wide range of interventions targeting adolescent girls can improve their agency and decision-making by creating safe learning spaces and through targeted campaigns amongst parents and communities. The evaluation of the Siyani Saheliyan programme by OPERA (2020) also found that the programme had both positive and sustaining effects on recipient girls’ noncognitive outcomes. The evaluation notes that both positive and sustaining effects are important - sustaining effects are important for girls who have high levels of noncognitive outcomes and manage to sustain these as a result of the intervention. On the other hand, positive transformational effects of the programme can imply that girls previously lacking or having low levels of non-cognitive skills feel more able to utilise these. The evaluation also noted that having a negative change in non-cognitive outcomes cannot be seen as an adverse effect of the programme either as many programmes help young people to be more certain about their abilities. Therefore, girls who previously thought highly about their non-cognitive abilities may face an adjustment as a result of the program. More specifically, the report finds for example that 39% of the beneficiary girls felt that they did not have the belief in their ability to achieve before the programme but did following the completion of the programme; 54% of the girls felt they had good qualities before and after the programme, an important sustaining effect of the interventions. There were changes observed in girls’ awareness of laws protecting women, or their feelings on being self-reliant as well as their attitudes with regards to gender equality.

**Discussion:**

Despite the dearth of evidence, these interventions are important because one study which evaluated a programme offering information about the returns to education to both children and parents in Madagascar, did find relatively significant positive effects on school attendance. There is also evidence specific to Pakistan, albeit based on evaluations using mixed methods approaches rather than experimental or quasi-experimental methods.

Table 10: Summary of impact of programmes related to wider education benefits

Sub-categories	What has worked	What is unknown	Priority Issues	Possible Interventions
Providing information	Limited impact of providing information of outcomes considered	Robust and externally valid evidence of success of programmes that	Cost-effective ways of improving girls' non-cognitive outcomes through	Develop programmes that provide information about the long-term benefits of

		provide information	wider education benefits	education to both children and parents.
Providing learning spaces	Providing learning spaces leads to decrease in child marriage, agency and choice	Externally valid evidence on effectiveness of providing learning spaces programmes	Designing locally acceptable learning space programmes to address child marriage or childbirth	Expand the use of complementary learning spaces like NGO programmes and girls' clubs to empower girls and improve their self-esteem and knowledge about critical issues.

## E. Enhancing community ownership of girls' education

### International evidence:

Table 11: Summary of evidence on enhancing community ownership of girls' education

Sub-categories	Number of studies considered	Study Design	Outcomes considered
Enhancing community ownership of girls' education	2	1. Mixed methods	1. Beliefs about gender and health 2. Education related outcomes

A total of 30 programmes (14 randomised controlled trials, 16 quasi-experimental) were reviewed related to enhancing community ownership of girls' education. However, despite fulfilling the inclusion criteria, these studies were rated as low-quality and only 2 studies between 2021 and 2023 were finally included in this review.

Evaluations of programmes using Community-Based Girl Groups reported improvements in attitudes and beliefs about gender and health; boosts in education-related outcomes, such as numeracy and school enrolment; and increases in economic and psychosocial assets. They also reported positive effects on knowledge and awareness about health and gender. In general, these results suggest that CBGGs appear to have more potential to impact individual outcomes than outcomes that rely on a group. The summary of CBGG effects is informative. However, limited evidence and the lack of

comparability between studies make these results preliminary. Box 3 summarises some new evidence based on a mixed-methods evaluation of the Girls Education Challenge. It notes, specifically, the importance of community engagement and specifically the critical role that teachers can play within communities especially in times of crisis.

**Box 3: Evidence from GEC – the important role of teachers and community leaders during Covid-19 in Afghanistan, Ghana and Sierra Leone**

The Covid-19 pandemic exacerbated key supply-side and demand-side constraints to girls' education. An independent evaluation report of the GEC (Rose et al. 2021) focused on teachers and teaching of marginalised girls during the Covid-19 pandemic in three challenging contexts – Afghanistan, Ghana and Sierra Leone. This mixed-methods evaluation noted that the pandemic in these three contexts significantly reduced the time available to girls to learn due to an increase in domestic and/or income-generating duties and that Covid-19 adversely affected girls' psychological wellbeing.

Specifically, the evaluation has found that during school closures, the role of teachers expanded from a primarily educational one to encompassing a broader range of support functions. Community-based female educators in particular were instrumental in monitoring girls' wellbeing and mitigating their risk of dropping out of schools/educational spaces. Community-based female educators were often recruited locally and so able to move around during 'lockdown' periods while travel was restricted and were trusted sources of information for girls. These community-based teachers typically lived locally, were often embedded in local community groups, and may have been personally acquainted with girls' families and their personal circumstances, which helped them provide differentiated attention and care. Moreover, safeguarding concerns and social norms about interactions between girls and male teachers outside of a formal school setting prevented male teachers from supporting girls during school closures. Teacher engagement during school closures was identified as being particularly valuable to communities and parents with low literacy levels, especially as teachers delivered Covid-19 information and resources within communities. In all three countries, community leaders and community groups also played a critical role – through supporting families, monitoring girls' education and providing amenities such as food or money.

In addition to the evaluation findings reported above, there is also wider evidence from the Girls' Education Challenge that has focused specifically on Community-Based Education (CBE) programmes in contexts where the GEC is operational. A GEC learning brief (GEC - Community-based education: informal and invaluable, April 2023), highlights the importance of CBE programmes especially for some learners, e.g. those who are overage for their grade and where the formal system is unable to meet their needs. In such situations, CBE can provide a tailored approach to meet the needs of these children. Typically such programmes take place within local community spaces and are run

and overseen by non-state actors including local communities, community-based organisations, NGOs etc. Within GEC programmes, there is evidence that holistic approaches are adopted towards education programming to reach the most marginalised girls and typically this involves work on changing community attitudes and norms, improve teaching and monitoring continued attendance. There is evidence from 5 CBE programmes across Ghana, Nepal, Sierra Leone, Kenya and Zimbabwe that these programmes have impacted positively on girls' learning outcomes. Amongst the factors identified in their success are: flexibility in timetabling to suit girls' needs; tailoring programme delivery to specific girls' needs; careful considerations of language of instruction; targeting the most marginalised and creating safe and nurturing environments to support learning, specifically all-female spaces where possible.

### **Evidence from Pakistan:**

A high-quality study using a randomised controlled trial design by Asim and Riaz (2020) conducted a field experiment in rural Sindh to examine the impact of simple approaches to strengthening community engagement with schools and the resultant impact on student education outcomes (girls and boys). The methods of community engagement included face-to-face dialogue at externally facilitated community meetings, and ongoing, anonymous dialogue via text messages. Evidence suggests that the interventions improved communities' interest in education as measured through an improvement in the number of functioning schools. In the case of the text message treatment, the study found significant gains in retention of students in grades 2, 3, and 4. On the supply side, the schools significantly increased staffing and the share of one-teacher schools was reduced; however, teacher absenteeism increased, and there was no substantial impact on basic school infrastructure. No evidence is found of impact on measured test scores for any intervention. In terms of differentiated outcomes for girls and boys, the study found that whilst the SMS intervention significantly improved retention of boys in lower grades, there was no significant impact on girls' enrolment, a finding the authors attribute to the depth of cultural norms, barriers to girls' enrolment or to the lack of access of mobile phones by female family members. This study also highlights the importance of cheap ICT interventions (SMS in this case) to improve enrolments more broadly.

The GEC studies in Pakistan and the Siyani Saheliyan evaluation report discussed at length above provide useful insights on the importance of interventions that focus on community advocacy and ownership of girls' education. They also suggest the crucial importance of creating 'safe learning spaces' for girls. Research in Afghanistan under the [Education Equity and Quality in Afghanistan and Pakistan \(EEQAP\)](#) study conducted 1200 Community Based System Dynamics workshops with students, parents, teachers and school committee members respectively to help improve learning and teaching processes in primary schools of Afghanistan and Pakistan. Workshops asked about what was influencing learning. In a collaborative manner, participants drew maps of all the potential causal relationships between factors that were influencing learning and agreed on interventions to change the system. Based on their decisions, funders-built schools, new classrooms, bathrooms, playgrounds etc. Schools also established parents/teachers' regular meetings, classroom rules and regulations,

classroom registrar to follow students’ progress, monthly project exhibitions for parents, regular cleaning sessions, among many other new activities. The website suggests that findings how that after 3 years of intervention, children did better in intervention schools as compared to control schools in both academic outcomes (maths, reading, writing) and multiple life skills (self-awareness, empathy, critical thinking, creative thinking, decision making, problem solving, effective communication, interpersonal relationship).

Whilst not directly linked to the theme being discussed, there is evidence from Pakistan that examines how NGO schools and non-government school systems in Pakistan focus efforts on recruiting, identifying, training, grooming, supporting, recognizing, and rewarding school leadership than government schools. As a result, there is evidence that there are differences in perceptions of autonomy, authority and in effectiveness as well as in how school heads look at their role (administration or leadership) (see Bari, Malik & Aslam 2017).

**Discussion:**

The small size of the evidence base, as well as the tremendous variability in the study design, implementation features, and outcome measures. More evidence would shed light on the most promising design features, making the practical implications of impact evaluation results clearer.

Table 12: Summary of impact of enhancing community ownership of girls’ education

Sub-categories	What has worked	What is unknown	Priority Issues	Possible Interventions
Enhancing community ownership of girls’ education	Positive impact on beliefs on gender and health, awareness and educational outcomes	Externally valid results of community ownership	Effective designs of community ownership	Localised version of community-based education implemented in Afghanistan

## F. Risks and protective factors

### International evidence:

Table 13: Summary of evidence on risks and protective factors

Sub-categories	Number of studies considered	Study Design	Outcomes considered
Risks and protective factors	4	1. Quasi experimental with difference in differences 2. RCT 3. Quasi experimental with simple differences	Child marriage and adolescent pregnancy

**Four** studies conducted between 2014 and 2023 were included because these studies addressed issues such as child marriage and its impact on education outcomes by using multifaceted experiments.

The selected interventions incorporated information on the legal age for marriage within life skills components of empowerment programmes in Uganda and Sierra Leone (Bandiera et al., 2019; Bandiera et al., 2020, respectively), a school-based life skills curriculum in India that addressed child marriage and related topics (Edmonds et al., 2023), and a financial incentive aimed at delaying marriage in Bangladesh (Buchmann et al., 2016). These interventions encompassed additional elements such as vocational training (Bandiera et al., 2012, 2019), community mobilisation, safe space groups with a life skills curriculum that included educational support (Buchmann et al., 2016), and mentoring (Edmonds et al., 2023). See Box 1 above for further evidence that is more inclined towards mixed methods.

### Evidence from Pakistan:

Again, we have no evidence on such programmes from Pakistan.

### Discussion:

These components were often designed with the intent of contributing to marriage delay by enhancing girls' agency and providing mentorship as non-familial social support. Due to the limited number of studies and the absence of direct evidence, the certainty of the findings is notably low, underscoring

the need for further research. Notably, none of the identified studies incorporated adolescent pregnancy prevention as an explicit part of their intervention.

Table 14: Summary of impact of risks and protective factors

Sub-categories	What has worked	What is unknown	Priority Issues	Possible Interventions
Risks and protective factors	Multicomponent programmes had a small but positive impact on reducing child marriage	Impact of these programmes on early-marriage birth	Invest in research to better understand the link between child marriage and education outcomes and develop interventions that empower girls, provide mentorship, and delay marriage. Addressing adolescent pregnancy prevention should also be considered.	Interventions targeting child marriage and early marriage directly

In summary, the urgent and catalytic issues for education policy intervention related to girls' education include improving school infrastructure, promoting multi-component programmes for adolescent girls, reducing the cost of education, providing information about the benefits of education, supporting Community-Based Girl Groups, and addressing child marriage and its impact on education outcomes. These interventions can significantly enhance girls' education in Low- and Middle-Income Countries, including Pakistan.



## 1.2. Children-with-Disabilities

### International evidence

Table 15: Summary of evidence on children-with-disabilities

Sub-categories	Number of studies considered	Study Design	Outcomes considered
Teacher training	6	1. Mixed methods with pre and post	Methods of teaching
Curriculum and instruction	3	2. Qualitative studies 3. Simple differences	Inclusivity of curriculum
School conditions	15	1. Simple differences 2. Qualitative studies 3. Mixed methods	Inclusivity of facilities at school
Inclusion within the community	2	1. Mixed methods with pre and post	Acceptance of children with disability in community
Partnerships	4	1. Qualitative	Degree of awareness on inclusive education among stakeholders

A review of 29 studies that were implemented between 2000 and 2023 was conducted to understand the international evidence on the state of inclusive education for children with disabilities. The evidence was then further sub-categorised into teacher training, curriculum and instructions, school conditions, inclusion within the community, partnerships, and transition.

#### Teacher Training:

Six studies between 2016 and 2019 were included under the teacher training sub-category.

Evidence suggests that teacher training programmes improved inclusive education (IE) elements, using various methods like lectures and discussions (Carew et al., 2019; Delkamiller et al., 2016; Kurniawati et al., 2017; Sibtain, 2013; Srivastava et al., 2015b). Duration varied from ten hours to two years. Four studies aimed at bettering teacher attitudes toward inclusion but didn't pinpoint a consistent approach or timeframe (Carew et al., 2019; Kurniawati et al., 2017). Despite improved attitudes, two studies found no significant change in behaviour or intentions (Carew et al., 2019; Kurniawati et al., 2017).

### **Curriculum and instructions:**

**Three** studies conducted between 2016 and 2019 were included under curriculum and instructions sub-category.

Studies explored teaching strategies and curriculum choices for students with disabilities. In Indonesia, 'Cluster-Based Instruction (CBI)' showed a significant positive impact on maths achievement compared to 'Full Inclusive Instruction (FII)' (Gunarhadi et al., 2016). Another programme for first graders with scores below 70% resulted in substantial improvements (Stone-Macdonald & Fetting, 2019). In India, curricular choices in junior colleges were found to inadequately prepare students with disabilities for post-secondary mathematics (Eichhorn, 2016).

### **School Conditions:**

**Fifteen** studies that were conducted between 2005 and 2016 were included under the school conditions sub-category.

In examining facilities and materials for inclusive education (IE), studies delved into classroom resources, school facilities, and human support for students with disabilities. Participants in interviews noted a lack of teaching resources for preschool teachers, with 97% agreeing that resources influenced IE implementation (Okongo et al., 2015). In Uganda and Malawi, a study found that only seven out of 41 surveyed schools provided water and sanitation facilities for students with disabilities (Erhard et al., 2013). In Nigeria, facilities equipped for students with disabilities were significantly correlated with academic performance in public secondary schools (Oluremi & Olubukola, 2013). Another study (Adeniyi et al., 2015) involving 227 teachers revealed a significant relationship between materials, human resources, mindset, and IE practice, with the highest correlation found between materials and successful IE practice.

**Ten** studies explored outcomes of integrating students within general education, focusing on varying degrees of integration. In Jordan, parent satisfaction varied between integrated and segregated settings (Al-Dababneh, 2016). A Ghana study found mixed progress among visually impaired students in both environments (Agbeke, 2005). Resource rooms in Jordan garnered high mother satisfaction but varying teacher satisfaction (Alkhateeb & Hadidi, 2009).

Positive outcomes were reported in Ghana, though both noted a lack of teacher training (Ocloo & Subbey, 2008; Uzair-ul-Hassan et al., 2015). Challenges included insufficient support and resources in Tanzania (Tungaraza, 2014), a lack of inclusive practices in Lesotho (Mosia, 2014), and a disparity between self-ratings and observations in Lesotho (Johnstone & Chapman, 2009). In India, 40% of teachers didn't change practices after implementing integrated education, resulting in partial inclusion (Singal, 2008).

### **Inclusion within the community:**

**Two** studies that were conducted in 2007 were included under inclusion within the community category.

In an Indian programme emphasising community mobilisation and school reform, 98% of surveyed students with disabilities enjoyed attending schools, and 97% of peers reported being friends with a student with a disability (Chadha, 2007). However, 85% of teachers in the study reported insufficient support, emphasising the need for greater support in providing education to students with disabilities in general education settings. In Ghana, 'inclusive project' schools aimed to enhance access, retention, and participation for students with disabilities, but a comparison of teacher attitudes found no significant differences, possibly due to lack of preparation, support, and teacher involvement in programme design (Agbenyega, 2007).

### **Partnerships with stakeholders**

**Four** studies that were conducted between 2003 and 2019 were included under the partnerships with stakeholder's sub-category.

Studies focused on stakeholder partnerships in Inclusive Education (IE), emphasising social accountability, community support, development plans, and increased technical skills (Trani et al., 2019; Villa et al., 2003; Polat, 2011; Beutel et al., 2019). These initiatives, involving training programmes, group workshops, and school teams, showcase the potential for community and stakeholder participation in creating inclusive plans and measurement tools (Beutel et al., 2019; Trani et al., 2019; Polat, 2011). Community engagement in programmes, such as in Vietnam, can impact areas like community awareness, local infrastructure, teaching quality, and family support (Villa et al., 2003), demonstrating the efficacy of involving multiple stakeholders in context-specific goals for improving the integration of students with disabilities.

#### **Box 4: Evidence from GEC – how to support education of marginalised girls with disabilities**

An independent evaluation study of the GEC focuses specifically on girls with disabilities. This study by Singal et al. (2023) examined interventions that can improve educational outcomes for girls with disabilities (GWD) in GEC in Malawi, Nepal and Uganda. In all three contexts the evaluation found that sampled GWDs showed improved literacy and numeracy skills as a result of project support. GWDs spoke about the role of assistive devices, classroom adaptations (use of Braille, sign language) and teaching support (extra attention, encouraging attitudes) in contributing to their increased ability to read and write. GWDs in all three contexts also reported an increase in their socio-emotional skills including their self-confidence and positive social interactions with their peers, neighbours and community members. This improvement in GWDs' socio-emotional skills

was also reported by parents/caregivers, teachers/educators, and community members in all three contexts. In particular, GWDs in Nepal and Uganda who were earning income as a result of the vocational training they received from the projects expressed feelings of empowerment and increased confidence due to their newly gained financial independence.

Teachers emphasised their improved knowledge in supporting GWDs in the classrooms, such as giving extra attention to students with disabilities, changing seating arrangements, etc. However, teachers felt they needed more support to cater to the needs of GWDs and expressed the desire for more effective continuous professional development (such as their knowledge of Braille and sign language). Nonetheless, fundamental barriers that hampered the inclusion of not just GWDs, but all girls, were highlighted in all three contexts. These include physical barriers, such as a lack of transport to and from the schools/ learning centres; as well as infrastructural barriers, including inaccessible and unclean toilets. In Malawi, basic facilities such as desks/chairs were unavailable, which affected all students.

Crucially, this evaluation also highlighted the importance of using participatory methods of photovoice and audio notes in research as these proved particularly useful in elevating the voices of GWDs and providing a tool to conduct in depth interviews with them. Many of the barriers mentioned by girls were highlighted through the photos and audio notes.

The findings from this evaluation report indicate that it is possible to reach even the most marginalised girls and support them through targeted interventions. However, this often involves overcoming the most critical supply-side barriers to access that continue to pose challenges to girls' education and to the education of children with disabilities across many contexts.

Source: drawn from [gec-ii-evaluation-study-4-disability-report\\_may2023.pdf](#)  
([girlseducationchallenge.org](#))

### **Evidence from Pakistan:**

The review draws from peer-reviewed papers published between 2000 and 2022, with the inclusion of approximately 30 relevant articles.

There is emerging evidence on children with disabilities in Pakistan. Significant effort has gone into estimating disability figures, for example, using the Annual Status of Education Report Surveys developed by the Washington Group on Disability Statistics. An empirical study using ASER data by

Singal et al. (2018) from 2015 on children aged 5-16 years found that children who were identified by their carer/mothers as having moderate to severe disabilities were less likely to be attending school and had lower levels of learning on basic reading and maths tasks, than their peers who were not identified as having any difficulties in functioning. The study also found that being a co-resident/sibling in a household with a child with moderate to severe disabilities was associated with lower levels of basic reading and numeracy for the co-residents/siblings compared to other children.

An ESRC-DFID funded study in India and Pakistan also aimed to focus on children with disabilities. The TEAch project was instrumental in shaping the debate on measuring disability in Pakistan. A report by Bari et al. (2018) noted the vital importance of adopting approaches in Pakistan that identify children with different types and severity of disability in surveys to understand the challenges they face in their schooling experiences and identify strategies to support them. The study also concluded that inclusive education in a context like Pakistan needs to be understood broadly, considering disadvantages arising from the intersection of disability, poverty, gender, location and other factors. Finally, the study found that there was evidence from Pakistan to suggest that children with disabilities were attending mainstream (government and private) schools which, in turn, implies the need to identify strategies to support their learning in these settings.

The study by Malik et al. (2022) also highlights the invisibility of children with disabilities in data on educational access and learning in Pakistan. Using data from a household survey undertaken in rural Punjab as part of the TEAch project, the study aims to identify the extent to which children with disabilities are in school and learn the basics in literacy and numeracy. As with the report discussed above, this study also finds that perhaps contrary to expectations, many of children with disabilities in this context are in mainstream (government and private) schools, although their chances of being in school are lower than their peers. They also find that overall levels of literacy and numeracy are low, even more so for children with disabilities. These findings corroborate both evidence from other contexts but also the findings using ASER data from Pakistan. Another study by Singal et al. (2011) using an older household survey data set from urban and rural households from two of the provinces noted the continued marginalisation of young people with disabilities with regards to education, employment, and marriage prospects.

Despite this above emerging evidence from Pakistan, one major challenge and research gap pertaining to inclusive education in Pakistan, emphasising its alignment with the Sustainable Development Goals, which aim to promote an inclusive education system.

One salient issue that emerges from this rapid review is the limited recognition of disabilities in Pakistan's Census database, which only acknowledges four specific types—physical, hearing, visual, and intellectual—while neglecting other disabilities such as Autism, Down's syndrome, attention deficit hyperactivity disorder, and more (Gilani, Waheed, and Lakhvi, 2020). This discrepancy results in a lack of reported data on the population with these severe disabilities and is further exacerbated by the absence of statistics differentiating between mild, moderate, severe, and profound disabilities (National Education Policy, 2017). This inadequate data collection becomes a significant barrier to inclusivity, as it leads to the exclusion and segregation of individuals with special educational needs.

However, efforts have been made by Foreign Commonwealth & Development Office UK to collect this data which will be available by early 2024.

A critical gap identified is the insufficient representation of qualitative research studies related to inclusive education, with quantitative research dominating the field (Malik et al., 2022). This is especially important given the findings presented in Box 4 above which highlight the need for participatory methods in research to centre the voices of children and specifically those of children with disabilities. While quantitative studies explore aspects like teacher attitudes, perceptions, and professional development, there is a notable scarcity of qualitative research examining inclusive practices. Furthermore, the integration of technology and assistive devices for catering to disabilities is an underexplored dimension in the reviewed research papers, highlighting a missed opportunity to enhance inclusive education through technological advancements (Singal, 2016, Box 4).

The role of stakeholders in promoting effective inclusive educational practices and the development of practical models for inclusive schools emerge as key areas where additional research is warranted (Kazimi and Kazmi, 2018; Ahmad, Reba, and Ahmad, 2020). The need to explore inclusive schools and their effective implementation is evident, as the Sustainable Development Goal for 2030 and Article 7 of UN Convention on the Rights of Persons with Disabilities (UNCPRD) emphasises the transformation of all schools into inclusive institutions.

An intriguing geographic gap is discernible, with most studies focusing primarily on the Punjab province, leaving other regions, such as Balochistan and Khyber Pakhtunkhwa, with minimal research representation. Notably, no research was found to have been conducted in Azad Jammu and Kashmir or Gilgit Baltistan, further emphasising the need for more comprehensive research efforts in various provinces (Singal, 2016).

## **Discussion:**

In conclusion, the review underscores the necessity of moving beyond inclusive education to build an inclusive society, consistent with the principles of social justice. Inclusive societies recognise and accommodate the needs of all individuals, fostering an environment where every person, regardless of their abilities or disabilities, can participate on equal footing (Hameed & Manzoor, 2019; Shaukat, 2015). The theory of Social Justice, as articulated by Nancy Fraser (2008), aligns with this perspective, emphasising the importance of recognition, redistribution, and representation in achieving justice. For inclusive education to become a reality, it must be linked with the concept of an inclusive society and the commitment to provide education as a universal birthright. Policy development and implementation, teacher training, curriculum development, and continuous professional development are instrumental in creating an inclusive educational environment. Collaboration among provinces is crucial to address geographic disparities and comprehensively advance the inclusive education agenda.

Ultimately, the review highlights the imperative of embracing diversity, promoting social justice, and recognizing that every individual, regardless of their abilities or disabilities, deserves an inclusive education that respects and values their unique contributions to society.

From the review, several priority issues related to inclusive education in Pakistan can be identified, along with suggested interventions:

Table 16: Summary of impact of interventions related to inclusive education

Sub-categories	What has worked	What is unknown	Priority Issues	Possible Interventions
Teacher training	Teacher training on inclusive education positively improved ways in which teacher incorporated inclusive teaching methodologies	Duration of such trainings is still understudied	Robust teacher training techniques to improve inclusive pedagogies	Teacher training programmes across Pakistan keeping duration of training as constant
Curriculum and instruction	Introduction of inclusive curriculum showed a significantly positive impact on maths scores for children with disabilities	1. Impact on post-secondary maths scores 2. Teacher attitudes towards children with disabilities within Pakistan	1. Focus on enhancing inclusivity of post-secondary maths scores of children with disabilities	1. Cluster-based instruction method at post-secondary level for children with disabilities 2. Behavioural interventions to increase teacher sensitization
School conditions	Positive correlation between better school endowment in terms of facilities for children with disabilities and their learning outcomes	1. Satisfaction of parents with school conditions and their acceptance of sending children with disabilities to school	Provision of necessary infrastructure to improve access of education to children with disabilities	Provide specialised technology tools and training for teachers and students
Inclusion within the community	Muted impact of interventions improving inclusion within the community	Development and implementation of policies that promote social justice, equality, and universal access to quality education for all,	Transition from Inclusive Education to an Inclusive Society	Community level interventions to increase inclusivity especially from remote areas of Pakistan

regardless of abilities  
or disabilities.

Partnerships  
with  
stakeholders

Engagement of  
stakeholders increases  
the impact of efforts  
towards inclusive  
education

Evidence of  
effectiveness within  
the context of Pakistan

Stakeholder  
engagement  
and practical  
models

Engage stakeholders,  
including parents,  
teachers, and  
policymakers, in  
promoting effective  
inclusive educational  
practices

Limited  
Recognition of  
disabilities in  
Census data

Improve data  
collection and  
inclusion by expanding  
the categories of  
recognised disabilities  
in Pakistan's Census  
database and add Child  
Functioning Module.  
This should encompass  
conditions such as  
Autism, Down's  
syndrome, attention  
deficit hyperactivity  
disorder, and more.  
Additionally,  
differentiate between  
mild, moderate, severe,  
and profound  
disabilities for  
comprehensive and  
accurate data

Lack of  
qualitative  
research on  
Inclusive  
Education

Promote and fund  
qualitative research  
studies alongside  
quantitative research.  
Encourage studies that



explore inclusive practices, focusing on understanding the experiences of students, teachers, and families in inclusive education settings. This will provide a more comprehensive perspective on the challenges and successes of inclusive education.

In summary, the priority issues identified in the text necessitate interventions that focus on data improvement, research diversification, technology integration, geographic inclusivity, and the broader goal of creating an inclusive society. Valid evidence for interventions will contribute to advancing inclusive education in Pakistan and ensuring that every individual, regardless of their abilities or disabilities, has access to quality education and social justice.

### 1.3 - Children from minority groups

#### International evidence:

Table 17: Summary of evidence on inclusive education (children from minorities)

Sub-categories	Number of studies considered	Study Design	Outcomes considered
Children from minority groups	10	Case studies	Bullying at school

Ten studies were included in this review of studies on children from minority groups between 2010 and 2018.

Studies examining the impact of inclusive school and anti-bullying initiatives from all around the world often concentrate on LGTB youth samples, treating transgender youth as part of this larger group. However, limited information exists regarding the specific positive outcomes for transgender youth, despite evidence indicating they face a more hostile school environment and worse educational results compared to their cisgender peers. To ensure the effectiveness of these school resources for transgender youth, it is crucial to separate the data concerning LGBT youth and assess their unique needs (Toomey et.al., 2010; Kosciw et.al., 2010; Greytak et. al., 2009, 2013). A broader approach to addressing identity-based discrimination and prejudice within youth settings is crucial, recognizing that homophobia and transphobia affect not only young people identifying as ‘bullied’ and/or LGBT (Payne, 2013). Future policies, practices, and research should shift their focus towards school and youth cultures influenced by broader social structures, rather than solely emphasising the perceived aggression of individual ‘bullies’ or the vulnerability of LGBT identities (Payne, 2013). Initiatives like ‘Safe Schools’ should adopt an expansive educational approach that challenges hetero/cis-normative assumptions, emphasising the affirmation of diverse gender and sexuality identities in students (Ulman, 2018).

Similarly, research on children from minority religious traditions and the State and children from minority groups is limited and mainly falls under inclusive education (IE) literature. However, several gaps exist in IE literature as well. The significance of school leaders’ role in the implementation of Inclusive Education (IE) should not be underestimated, as emphasised by Ainscow and Sandill (2010). It’s evident that future research should encompass the attitudes of both children and school leaders. Furthermore, professional development for IE teachers should extend beyond training programmes to workplace learning communities that involve special teachers or co-teaching, as suggested by Fluijt, Bakker, and Struyf (2016) and Rieser (2012). Investigating this aspect is essential for successful IE implementation.



### **Evidence from Pakistan:**

There is literature on Pakistan based on differentials in access to quality education based on gender, religion, linguistic group, caste, geography, and disability, especially from the discipline of sociology but they did not fulfil the inclusion criteria and hence were excluded. There is no evidence of any interventions related to transgender groups.

### **Discussion:**

While the selected reviews did not delve into financial resources and infrastructure accommodations for IE, these factors may be addressed in national or international reports not covered in this study. The focus on ‘classroom instructional practice’ was more pronounced than ‘state/school/district practice,’ which might be documented in reports beyond the study’s scope. Notably, academic participation in IE was rarely mentioned in the literature, despite its importance, so further research on this topic is warranted. This review, while drawn from reviews in the ERIC and WoS databases, highlights the need for comprehensive future research that considers the attitudes of all students, teacher professional development, and academic participation in IE practices.

Table 18: Summary of impact on inclusive education (children from minorities)

Sub-categories	What has worked	What is unknown	Priority Issues	Possible Interventions
Children from minority groups	Challenges faced by children from minority groups	<ol style="list-style-type: none"> <li>1. Evidence from LMICs</li> <li>2. Research gaps in the context of inclusive education for children from minority religious traditions and minority groups</li> </ol>	Addressing identity-based discrimination and prejudice in youth settings, going beyond the focus on individual 'bullies'	Implement a culturally tailored teacher training programme that includes hands-on workshops and seminars focused on equipping educators with specific strategies for adapting teaching materials, classroom practices, and communication to meet the unique needs of children from minority groups.

## 2- Learning Environment

### Diagnostic feedback

#### International evidence:

Table 19: Summary of evidence on learning environment

Sub-categories	Number of studies considered	Study Design	Outcomes considered
Diagnostic Feedback	9	Mixed methods	Learning outcomes
Teacher education programme for improved classroom practices	5	Mixed methods	Maths scores

**Nine** studies that were conducted between 2008 and 2021 were included under the diagnostic feedback sub-category.

Teaching learning practices in the classroom and self-assessment as a model of teacher development to improve classroom practices in science, literacy, and numeracy comprise of diagnostic feedback interventions that use ‘low stakes’ student tests to provide teachers with information on student achievement that will enable them to target their efforts in the classroom more effectively. ‘Low stakes’ tests have been described as ‘assessments for learning’ and can be compared to ‘high stakes tests’, which can be described as ‘tests of learning’. Low-stakes tests allow teachers to monitor student progress and tailor their teaching approach to promote learning, without subjecting students to the stress of high-stakes exams.

There is some high-quality evidence from the UK context that has focused on the impact of teacher peer observation on student outcomes. The study by Burgess et al. (2021) conducted a field experiment across UK schools that trailed a low-cost intervention - teachers working in the same school observed and scored each other’s teaching. The paper finds that students in treatment schools scored 0.07 student standard deviations higher on maths and English exams. Teachers were further randomly assigned to roles—observer and observe—and students of both types benefited, observers’ students perhaps more so. These findings suggest the important role of feedback on teaching and ultimately on student outcomes. Review of studies further suggest a transition in feedback research towards a learning-

focused perspective (Boud and Molloy 2013; Winstone and Carless 2019). Carless and Boud (2018) define feedback literacy as the capacity to understand, use, and enhance work or learning strategies. Emphasizing seeking information, processing, and acting upon feedback (Malecka et al. 2020), the existing studies reframe feedback literacy as relevant in self-assessment. Nicol (2020) adds the importance of students generating internal feedback.

In the context of seeking feedback, two major strategies are identified: inquiry and monitoring (Leenknecht, Hompus, & Schaaf, 2019; Joughin et al. 2021).

Self-assessment, seen as crucial for fostering students' feedback literacy, enables them to seek external feedback and generate internal feedback through performance comparisons (Yan and Brown 2017). While this reciprocal relationship has received less attention, feedback-literate students are more likely to engage in meaningful self-assessments, improving future learning plans.

From one perspective, self-assessment involves both 'self' and 'others,' requiring students to seek external feedback, enhancing the accuracy of self-assessment (Malecka et al. 2020).

Additionally, during self-assessment, feedback-literate students, armed with learning-focused information, can generate higher-quality internal feedback, facilitating improvements in criteria, strengths and weaknesses identification, and adjustment of learning strategies (Yan 2020).

### **Evidence from Pakistan:**

High/low-stake assessments have been introduced by various provinces over time in Pakistan (Punjab Examination Commission (PEC) grade 5 and grade 8 examination, Khyber Pakhtunkhwa and Sindh have also experimented with these), recently formative assessments have been introduced, but the outcomes have not been tested rigorously. Ultimately, the purpose of these tests and assessments is to generate information which can enable teachers to target their teaching and to also inform parents. Whilst there does not seem to be many rigorous evaluations or studies on the former, one piece of rigorous evidence from Pakistan has showcased the importance of provision of information to parents on student learning outcomes. The study by Andrabi et al. (2017) studies the impact of providing school report cards with test scores on subsequent student test scores, on prices and enrolment in an education market where there are both government and private education providers. The study, in rural Punjab, finds that the provision of information in this way improved test scores, decreased private school fees and increased primary school enrolment. The provision of information in this way seems to improve market efficiency and student outcomes – in terms of test scores as well as through higher enrolment.

### **B. Assessing the efficacy of new teacher education programme for improved classroom practices**

### **International evidence:**

Five studies that were conducted between 2008 and 2021 were included under the teacher education programme sub-category.

There is a reasonably strong body of evidence suggesting that interventions aimed at enhancing teacher education, training, attitudes, and support levels can have a positive impact on improving girls' access to education, increasing their participation in school, and enhancing their learning outcomes.

Another study included a report on a teacher training programme. Elsewhere in this report, the chapter on pedagogical interventions brings together many interventions that include a teacher training component. However, in those cases, training typically took the form of a short period of topic-specific learning designed to facilitate the introduction of new classroom sessions. In contrast, the study we report on here focused on teacher training as professional development designed primarily to build teachers' professional capabilities.

Research on teachers' knowledge of subject matter, encompassing Content Knowledge (CK) and Pedagogical Content Knowledge (PCK), operates under the assumption that these forms of knowledge are fundamental to professional competence (Ball, Lubienski, & Mewborn, 2001; Woolfolk Hoy et al., 2006). Recent studies provide compelling evidence that teachers' subject-matter knowledge influences instructional practices and student achievement gains. For instance, Hill et al. (2005) demonstrated a substantial association between elementary teachers' Mathematical Knowledge for Teaching (MKT) and student gains in mathematical understanding, as reaffirmed in a later study (Hill et al., 2008).

A longitudinal study in Germany, drawing from the 2003 cycle of the Programme for International Student Assessment (PISA), highlighted the impact of both PCK and CK on student learning (Baumert et al., 2010). Notably, despite a high correlation between CK and PCK, PCK exhibited greater predictive power for student progress, and it decisively influenced key aspects of instructional quality. This underscores the importance of investigating how teacher education contributes to the development of teachers' subject-specific knowledge, a crucial aspect of educational reform (Ball et al., 2001).

### **Evidence from Pakistan:**

There have been a lot of changes on the side of teachers across Pakistan in recent decades. Teacher recruitment processes have been revamped. Teacher entry requirements have changed, teacher salaries and career-paths have been altered, and there have been many interventions at the level of induction and in-service training/support of teachers. Evidence on the impact of recruiting teachers on limited time contracts has been tested (and reported) but other interventions have not been rigorously evaluated. However, there is good quality evidence from Pakistan by Aslam et al. (2019) that suggests that teachers are critical inputs and make a difference to student learning – investments in teachers and their teaching practices would be a good investment for Pakistan. This study using data from rural Punjab finds that the competence and qualification of teachers within rural government schools matters

for student outcomes. It also finds that students from poorer socio-economic backgrounds don't progress as well in learning as their richer counterparts suggesting a need for targeted support to create a more inclusive educational experience.

**Discussion:**

There is a need to expand research efforts to assess the effectiveness of providing diagnostic feedback to teachers, particularly focusing on its impact on teacher performance and student learning outcomes. Overall, although there is evidence that learning outcomes of children improve with better qualified and trained teachers, an evidence gap exists in terms of replicability, and we need to get updated evidence.

Table 20: Summary of impact of interventions on learning environment

Sub-categories	What has worked	What is unknown	Priority Issues	Possible Interventions
Diagnostic Feedback	Self assessment lead to positive outcomes	Consistent results from empirically strong studies	Implement comprehensive diagnostic feedback programmes that provide actionable insights to teachers, accompanied by training on how to interpret and effectively use this feedback	Self-assessment drives to monitor impact on student learning outcomes
Teacher education programme for improved classroom practices	Better teacher training leads to better performance	Consistent results from empirically strong studies	Implement comprehensive teacher education programmes specially in STEM subjects	Programme aimed to test impact of providing teacher education on content knowledge vs pedagogical content knowledge and compare student math test scores



## Curriculum and EdTech solutions

### International evidence:

Table 21: Summary of evidence on curriculum and EdTech solutions

Sub-categories	Number of studies considered	Study Design	Outcomes considered
Learning	12	Mixed methods with quasi-experimental quantitative analysis	<ol style="list-style-type: none"> <li>1. Student learning outcomes</li> <li>2. Teaching skills</li> <li>3. Student knowledge acquisition and critical thinking</li> <li>4. Student skills</li> </ol>
Affective elements	8		<ol style="list-style-type: none"> <li>1. Non-cognitive learning outcomes</li> <li>2. Teaching skills and motivation</li> </ol>
Behaviour	6		<ol style="list-style-type: none"> <li>1. Student and teacher satisfaction</li> </ol>
Technology	7		<ol style="list-style-type: none"> <li>1. Student and teacher satisfaction and usage of technology</li> <li>2. Attitudes towards technology adoption</li> </ol>
Teaching/Pedagogy	10		<ol style="list-style-type: none"> <li>1. Learning behaviour</li> <li>2. Teacher skills</li> <li>3. Student learning outcomes</li> </ol>
Presence	2		<ol style="list-style-type: none"> <li>1. Student learning outcomes</li> </ol>
Design	5		<ol style="list-style-type: none"> <li>1. Maths scores</li> </ol>
Institutional Environment	2		<ol style="list-style-type: none"> <li>1. Professional learners</li> </ol>

Computer-assisted learning programmes (CAL) use computers, either in the form of laptops or computer labs, to aid or support children’s learning. In some cases, they are delivered as an integrated package together with new content and instructional approaches, alongside training for teachers in delivering this material. In other cases, the focus is simply on providing children with access to computers. 52 studies were included in our current rapid review on CAL dating between 2010 till 2018.

### **Learning:**

Twelve studies that were conducted between 2010 and 2018 were included under learning sub-category.

Learning includes examining aspects like knowledge acquisition and skills development.

The studies that are included in this review consistently found that the use of educational tools had the potential to enhance learning outcomes. For example, Chan and Leung (2014) observed improved achievement test scores in mathematics education through dynamic geometry software, while Calderón and Ruiz (2015) reported highly positive results when games were integrated into software project management topics. Moreover, studies specifically explored game-based learning, all of which highlighted its effectiveness in improving learning outcomes. den Haan and van der Voort (2018) emphasised better understanding of environmental sustainability and climate change complexities, and Baran (2014) found mobile tools valuable for pre-service teachers. Additionally, evidence includes animations and simulations in medical education, all of which consistently reported enhanced knowledge acquisition and critical thinking (Cook et al., 2012; Cook, Erwin, & Triola, 2010; Harder, 2010; Lapkin et al., 2010; Michael et al., 2014). Furthermore, there was a positive relationship between technologies like simulations and computer-assisted instruction and various skills including problem-solving, interpersonal, motor, and communication skills, through learning technologies (Thanaraj, 2016; Jensen and Konradsen, 2018; Hara et al., 2016).

### **Affective elements:**

Eight studies that were conducted between 2009 and 2017 were included under affective elements sub-category.

These elements encompassed aspects like learner satisfaction, enjoyment, attitudes, values, and beliefs when using educational technologies.

Current international evidence consistently indicated a positive association between technology use in education and favourable affective outcomes (e.g., Bernard et al., 2009; de Gagne, 2011; Gikandi et al., 2011; Kirkwood & Price, 2014; Nakic, Granic, & Glavinic, 2015; Scott et al., 2017). For instance, Papastergiou (2009) highlighted the potential of interactive technologies to boost learner motivation, while Lapkin et al. (2010) reported high levels of learner satisfaction with technology integration in learning.

### **Behaviour:**

Six studies that were conducted between 2009 and 2018 were included under behaviour elements sub-category.

Behaviour sub-theme included comparisons of digital games or game-based learning over conventional approaches, pointing to their positive impact on satisfaction and overall learning outcomes.

Additionally, three reviews observed improved satisfaction in mobile learning environments (Cheung & Hew, 2009; Guo et al., 2016; Kirkwood & Price, 2014). Nonetheless, certain studies reported mixed results in terms of student satisfaction with technology in learning (Cheung & Hew, 2009). For instance, Lahti et al. (2014) found no significant difference in satisfaction between e-learning and traditional learning for nurses, while Cook, Levinson, et al. (2010) noted inconsistent outcomes regarding online discussion and satisfaction. Other affective aspects, such as self-efficacy in educational technology, received limited attention, particularly in the context of nursing education (Chang et al., 2018).

### **Technology:**

**Seven** studies that were conducted between 2015 and 2017 were included under affective technology sub-category.

Technology sub-theme presents international evidence on the use and adoption of technology on educational outcomes and behaviours.

Educational technologies were often employed to encourage behavioural change (Boyle et al., 2016; Hainey et al., 2016; Scott et al., 2017). For instance, Hainey et al. (2016) noted that primary students playing games with healthy food stimuli exhibited improvements in their eating behaviour. Additionally, learner interactions with educational tools were a common theme (Petri & Gresse von Wangenheim, 2017), with researchers often examining the nature and extent of interactions with study participants and technological learning systems (Amara et al., 2016; Manathunga & Hernández-Leo, 2015; Pérez-Sanagustín et al., 2017).

### **Teaching/Pedagogy:**

**Ten** studies that were conducted between 2009 and 2018 were included under teaching/pedagogy sub-category.

Teaching/pedagogy sub-theme presents evidence on the use of technology on teaching methods on educational outcomes and behaviours.

Researchers consistently found a positive relationship between the use of educational tools and improved learning behaviour. For example, technology-enhanced simulation training in health professional education led to significant behavioural changes compared to no intervention, with prosocial video games positively impacting health professionals' prosocial behaviours (Cook et al., 2011). Papastergiou (2009) reported that game-based health education interventions for youth increased health-related knowledge and fostered positive health-related behaviours. In addition, Mikropoulos and Natsis (2011) concluded that collaboration and social negotiation were common among learners in virtual reality learning environments across various contexts.

Pulham and Graham (2018) identified popular techniques such as flexibility, personalization, and mastery-based learning in online and blended learning contexts. Sung et al. (2017) found unstructured teaching as the most frequent approach in mobile-computer-supported collaborative learning.

Different teaching strategies yielded distinct outcomes. Student-centred instructional approaches in classrooms not only improved content comprehension but also enhanced professional skills (Karabulut-Ilgu et al., 2018). Schmid et al. (2009) noted better learning outcomes in technology-intensive constructivist mathematics classrooms compared to traditional settings. Game-based learning coupled with constructive teaching strategies motivated students to actively solve problems (Kangas et al., 2017). Timely and high-quality online formative assessment feedback, as demonstrated by Cook et al. (2012), enhanced learning outcomes through interactive engagement. Similarly, Gikandi et al. (2011) found that teachers using online formative assessment improved the learning experience.

### **Presence:**

Two studies that were conducted in 2011 and 2018 respectively were included under 'presence' sub-category.

Presence discusses international evidence on the virtual environments and student related outcomes.

Mikropoulos and Natsis (2011) highlighted how students' sense of presence in virtual environments enriched learning outcomes through firsthand experiences. Social presence, as revealed by Jensen & Konradsen (2018), fostered collaboration among learners, enhancing team dynamics and, consequently, learning outcomes.

### **Design:**

Five studies that were conducted between 2017 and 2021 were included under design sub-category.

Design scrutinised design aspects in technology-enhanced learning like Massive Open Online Courses (MOOC)

Zhu et al. (2018) explored MOOC environments, discovering the influence of design collaboration activities, motivation schemes, and course quality on learners' attitudes. Stultz (2017), in the context of mathematics learning for students with learning disabilities, supported the use of computer-assisted instruction in course designs for special learning needs. For educational institutions, the development of personalised learning can facilitate learners to engage in learning MOOCs through a personalised design, including personalised learning path, personalised navigation, recommendation system, personalised assessment and personalised feedback because it may extrinsically and intrinsically animate learners to undertake more online learning activities and further spur them to perform their learning by developing the learner-centred personalised design in the MOOCs learning process (Lerís et al., 2017; Kiselev and Yakutenko, 2020; Janelli and Lipnevich, 2021).

### **Institutional environment:**

**Two** studies that were conducted between 2016 and 2018 were included under institutional environment sub-category.

Institutional environment scrutinised institutional support towards incorporating technology.

Concerning the institutional environment, Beckers et al. (2016) noted the significance of institutional support for successful e-portfolio implementation, especially when the portfolio is integrated into educational routines. Clunie et al. (2018) examined the cost-feasibility of applying technology in educational contexts, finding simulation training more costly but effective for health profession learners. However, comprehensive cost-feasibility analyses and robust quantitative approaches were lacking in these studies.

### **Evidence from Pakistan:**

There have been many ed tech programmes and interventions that have been introduced in the education sector in Pakistan. Most of these have been in the private sector but some have been implemented in the public sector too. We have some evidence of their effectiveness from the private sector, but these studies did not fulfil our inclusion criteria.

### **Discussion:**

The analysis of 52 papers underscores the multifaceted impact of educational technology, extending beyond learning outcomes. Affective elements and learning behaviours were consistently enhanced, emphasising technology's role in shaping the learning process. Pedagogical strategies such as student-

centred and collaborative approaches proved beneficial. However, the gap in the evidence lies in the limited focus on course design elements, presence, and the institutional environment, warranting further research in these areas. Additionally, there is a need for more reviews dedicated to school-level education, as the majority focused on adult or higher education, overlooking the unique impact on society. Lastly, reviews focusing on studies in naturalistic environments could provide an unbiased assessment of technology's impact, separate from researcher interventions.

Table 22: Summary of impact of curriculum and EdTech solutions

Sub-categories	What has worked	What is unknown	Priority Issues	Possible Interventions
Learning	CAL programmes lead to improved student learning outcomes and enhance teacher skills	Effectiveness of CAL programmes on the development of diagnostic feedback mechanism	Adoption of technology for student performance and instructional practices	Teacher training programmes can be designed to equip educators with the skills and knowledge needed to integrate technology and educational tools into their teaching, with a focus on enhancing learning outcomes
Affective elements and behaviour	Positive association between technology use in education and favourable affective outcomes like learner satisfaction, enjoyment, attitudes, values, and beliefs when using educational technologies	Explore affective elements, including learner satisfaction, motivation, and attitudes, in the context of Pakistan	Influence of educational tools on behavioural change and interaction patterns among students and technology	Investigating the impact of specific interventions, such as the use of pro-social video games and technology-enhanced simulation training, on behavioural changes within the context of Pakistan

Technology and Design	Gamified learning design stimulated positive behaviour	<p>1. Exploring the effectiveness of student-centred instructional methods, and constructive teaching strategies in conjunction with technology</p> <p>2. Impact of design collaboration activities, motivation schemes, and course quality influence learners' attitudes and outcome</p>	Assessing the role of course design elements in technology-enhanced learning is crucial	Varying degree of technology embedded in course design at school level education
Teaching/Pedagogy	Positive relationship between the use of educational tools and improved learning behaviour	Impact on school-level education, as many existing studies have concentrated on adult or higher education settings	Teaching approaches and strategies at school level	Impact of technology across different educational levels and contexts can provide a more comprehensive understanding of its effects
Presence	Virtual presence lead to positive pro-social behaviours	Impact in naturalistic environments, free from researcher interventions	Provision of naturalistic environments	Research on demand experimenter effect of technology adoption
Institutional Environment	Institutional support within education leads to better integration of technology	Impact of cost-effectiveness of implementing technology	Importance of institutional support, especially when implementing educational technology on a broader scale	Cost benefit analysis of a technology-based intervention



These interventions can help bridge the evidence gap and advance our understanding of the multifaceted impact of educational technology on learning outcomes, affective elements, learning behaviours, pedagogy, course design, institutional support, and cost feasibility across diverse educational contexts.



### 3- Resilient education service delivery

#### 3.1 Resilience in Education Service Delivery

##### International evidence:

Table 23: Summary of evidence on resilience in education service delivery

Sub-categories	Number of studies considered	Study Design	Outcomes considered
Climate education	49	Mixed methods including experimental methods	1. Understanding perspectives around climate change challenges 2. Scientific understanding of climate change
Successful models and programmes	11	Mixed methods including experimental methods	1. Student and teacher mental health 2. Responsiveness to disaster impacts
Experiences and resilience of learners	8	Mixed methods including experimental methods	1. Student mental health
Characteristics of resilient students	14	Mixed methods including experimental methods	1. Student resilience in terms of grit, adaptability and self-efficacy
Teaching styles and resiliency of teachers	19	Mixed methods including experimental methods	1. Teacher mental health

Climate change impacts and other anthropogenic influences will continue to increase the overall number and intensity of disasters in the future (Parmaesan et al., 2022). Therefore, among other infrastructures, educational institutions are persistently exposed to various risks and hazards, as highlighted by Yusuf et al., 2022, and Mirzaei et al., 2019, which jeopardise their operations and pose

a constant threat to education continuity. On a global scale, school buildings are regularly destroyed by disasters Gibbs et. al., 2019 and education is disrupted by other external shocks (Bellamy, 2016).

## **Climate education**

A total of 49 global studies that were conducted between 2000-2015 were included in our rapid review for climate education.

The review from all around the globe highlights that climate change education includes six effective themes, including personal relevance and engaging teaching methods. These themes align with established guidelines in environmental and science education that emphasise learner-centred, hands-on, inquiry-based learning opportunities. The Knowledge Integration Framework in science education stresses the importance of connecting content to personal experiences, promoting student collaboration, using various methods to make thinking visible, and encouraging lifelong learning through inquiry. Educators can use these themes to enhance climate change education programmes (NAAEE 2004; Linn and Hsi 2000; Svihla and Linn 2012). Personal relevance is crucial in education, facilitating the connection of prior knowledge with new information). However, achieving personal relevance in climate change education can be challenging due to the subject's complexity (Dilling and Moser 2007). Despite these challenges, effective programmes establish these connections. They often focus on illustrating climate change's local impacts on ecosystems, agriculture, and communities, connecting data from distant regions to local contexts (Gold et al. 2015). Some programmes simplify information, provide relevant examples, and use vivid illustrations to address climate misconceptions (Baker, Loxton, and Sherren 2013; Bofferding and Kloser 2015; Oluk and Özalp 2007; Reinfried, Aeschbacher, and Rottermann 2012), while others foster personal relevance through constructivist reflection and discussion (Holthuis et al. 2014; Niebert and Gropengiesser 2013).

Reviewed studies reveal that guiding student investigations and fostering discussions enhances scientific understanding and exposes learners to diverse perspectives (McNeal, Hammerman, et al. 2014). However, some classrooms exhibited a dominance of a single perspective (Öhman and Öhman 2013). Through field studies, experiments, and guided discussions, students explored their assumptions and views on climate change within a scientific framework and the context of other viewpoints (Cox, Kelly, and Yetter 2014; Faria et al. 2015; Hallar, McCubbin, and Wright 2011; Niebert and Gropengiesser 2013; Reinfried, Aeschbacher, and Rottermann 2012; Holthuis et al. 2014; Karpudewan, Roth, and Chandrakesan 2015; Klosterman and Sadler 2010; Lambert and Bleicher 2014; Mason and Santi 1998; McNeal, Hammerman, et al. 2014). This approach enabled students to critically assess, defend, and expand their ideas, resulting in a deeper understanding of climate change science, appreciation for diverse perspectives, and increased self-assuredness in engaging with differing viewpoints.

## **Successful models and programmes**

A total of 11 global studies that were conducted between 2009-2022 were included in our rapid review for successful models and programmes.

To address student burnout, educational institutions are encouraged to target stressors, improve coping programmes, provide ongoing support, and nurture student resilience (Huppert and Johnson, 2010; Galante et al., 2018; Chan et al., 2020). Mindfulness training has been found effective in enhancing students' emotional stability and overall mental health (Huppert and Johnson, 2010), with many students expressing interest in continuing such training (Huppert and Johnson, 2010; Akeman et al., 2020). Additionally, promoting play among early school children is recommended to reduce stress and build resilience (O'Keeffe and McNally, 2021), and psychological counselling, including activities like Elicitation Interview, can help students cope and develop resilience skills by raising awareness of their educational experiences (Savarese et al., 2019).

Moreover, programmes focusing on values, such as Teaching Personal and Social Responsibility and autonomy-supportive intervention programmes, have shown to enhance student resilience (Manzano-Sánchez et al., 2021; Reeve et al., 2020). The implementation of a school-based resilience curriculum, known as RESCUR, has the potential to bring about positive behavioural changes in both teachers and students, ultimately enhancing their socio-emotional competencies (Manzano-Sánchez et al., 2021; Reeve et al., 2020). In the realm of teacher resilience research, the effectiveness of the Aussie Optimism programme was explored, with findings indicating that this programme, when combined with teaching and coaching initiatives, led to a reduction in job-related anxiety and depression among teachers (Tyson et al., 2009). Participatory education is gaining attention as a means of fostering resilience development, guided by individuals' reflections on their experiences and leading to strategies for change in their current context. Additionally, programmes promoting public participation in disaster management, such as the "Safe Schools-Resilient Communities" programme in Iran, have enhanced capacities for effective emergency response to reduce disaster impacts (Amini Hosseini and Izadkhah, 2020), and participatory co-creation processes are recommended for designing locally meaningful interventions involving the entire school community (Morote et al., 2022).

## **Experiences and resilience of learners**

A total of 8 global studies that were conducted between 2010-2021 were included in our rapid review for experiences and resilience of learners.

Recent research has extensively examined the impact of the COVID-19 pandemic on students, highlighting increased distress and mental health issues (Reif-Stice and Smith-Frigerio, 2021). Recommendations include addressing students' challenges in alternative learning by improving web connectivity, refining evaluation systems, and implementing security measures (Oliveira et al., 2021). Medical learners, including dentistry, nursing, psychotherapy, and midwifery students, face unique stressors, particularly related to exposure to suffering individuals and death (Smith et al., 2021; Nodine

et al., 2021; Beaumont et al., 2017; Cooke et al., 2021). Resilience in these students is associated with a positive perspective, social support, and fewer difficult moments (Dyrbye et al., 2010). Unemployment during the pandemic has further exacerbated stress among medical students (Nodine et al., 2021).

There is also evidence from Afghanistan that showcases the protective role schools play in the lives of children, especially those with disabilities. A study by Trani et al. (2019) found that outcomes of children with disabilities in conflict settings are far worse in that they face even more barriers in accessing education and in learning once in school. Using two cross-sectional household data sets, the study shows that access to school and literacy did not improve for children and youth with disabilities between 2005-2013 despite education policies promoting inclusion. The outcomes were worse for girls with disabilities and those with a mental, learning out associated disability and living in households with uneducated heads. However, the study found that the odds of being mentally distressed significantly declined between 2005-2013 indicating an important role of the school as a protective space for children with disabilities, calling for a need for such protective spaces to develop resilience of children in conflict settings.

### **Characteristics of resilient Students**

A total of 14 global studies that were conducted between 2009-2021 were included in our rapid review for characteristics of resilient students.

Personality traits such as gratitude, grit, adaptability, and academic self-efficacy significantly contribute to students' resilience (Caleon et al., 2019; Calo et al., 2019; Eakman et al., 2019). Developmental and cultural assets, mindfulness, and a positive outlook also enhance resilience and well-being (Filbert and Flynn, 2010; Huppert and Johnson, 2010; The et al., 2018; Wang, 2009). Education institutions play a pivotal role in fostering these traits through tailored support programmes, curricula, and rules (Caleon et al., 2019; Calo et al., 2019). Research additionally explores the impact of factors like organisational support, self-control, parental involvement, and learning climate characteristics on student resilience (Hamama et al., 2013; Kotz'e and Kleynhans, 2013; Dyrbye et al., 2010; Crombie et al., 2013), and how teaching strategies, grit, and coping affect resilience during the COVID-19 pandemic (Kannangara et al., 2018; Koob et al., 2021; Rivera et al., 2021).

### **Teaching styles and resiliency of teachers**

A total of 19 global studies that were conducted between 2000-2021 were included in our rapid review for teaching styles and resiliency of teachers.

Teaching styles and educators' resilience are prominent research themes. Teachers exhibit resilience, even at the expense of personal commitment (Dietrich et al., 2020), but the pandemic has led to work-

related stress and digital fatigue among academics in Australia (McGaughey et al., 2021). Academic physicians with high burnout levels tend to have lower resilience (Lutovac and Assunção Flores, 2021). Incorporating the autonomy-supportive intervention programme (ASIP) in teaching enhances student autonomy and engagement (Reeve et al., 2020). New teachers' resilience is influenced by their ability to create connections in various aspects (Papatraianou et al., 2018), while technostress among teachers is mainly caused by organisation, technology, and people misfits (Wang and Li, 2019). School management should consider the broader school environment to strengthen resilience (Christodoulou, 2020).

Coping styles among female teachers include cognitive strategies, seeking emotional support from colleagues, fostering closer teacher-student relationships, and rationalising reactions (Levy and Khoury-Kassabri, 2021). In developing contexts, research covers teachers in vulnerable social situations, social capital, factors influencing resilience, and competences during crises (Paucer et al., 2012; Veronese et al., 2018; Yin et al., 2020; Acevedo-Duque et al., 2020; Adi Badiozaman et al., 2021). In developed economies, the focus has shifted from inclusive education to self-regulation, resilience-building education, commitment to development, professional learning, and COVID-19's implications for educators (Fisher et al., 2000; Klusmann et al., 2008; McDermid et al., 2016; Redmond et al., 2017; Fernandes et al., 2019; Portillo et al., 2020).

**Evidence from Pakistan:**

This is an area where there is some evidence (e.g., Trani et al., 2019) in Pakistan but significant gaps in the evidence also exists in this area and further research is needed.

**Discussion:**

Table 24: Summary of impact on resilience in education service delivery

Sub-categories	What has worked	What is unknown	Priority Issues	Possible Interventions
Climate education	Enhanced exposure to climate change issues led to greater understanding of climate change and its scientific understanding	Relationships between personal relevance, student engagement, and their impact on addressing misconceptions and inspiring climate action	Awareness about climate education	Conduct studies that delve into the varying degrees of climate change relevant across different age groups in Pakistan

Successful models and programmes	Mindfulness training led to better student mental health Promoting physical activity in early school children builds resilience	Success of models and programmes in Pakistan	Identifying strategic organisational processes, resource reconfiguration, and adaptation strategies to navigate environmental uncertainties	Intervention on gauging educational institutions preparedness for resilience
Experiences and resilience of learners, teachers and resilient students	Greater organisational support improved mental health outcomes for teachers and students	Resilient characteristics of students and teachers in Pakistan	Building a resilient society which can provide timely response to any calamity	Interventions to enhance student and teacher resilience in Pakistan schools in areas which are prone to natural disasters

Generation of robust evidence on key issues can help bridge the evidence gap and advance our understanding of the multifaceted impact of climate change on learning continuity across diverse contexts and in Pakistan more specifically. Research focusing on localised solutions and successful response strategies is essential. Within the context of increasing global attention to the broader issues of climate change and its impact on education, rigorous evidence base on localised understanding of what constitutes a resilient education service delivery, climate responsive schools, teachers, communities and learners is essential.

### 3.2 Education system-scaling innovation

Overall, the evidence gap map reviews for the following areas of reforms at scale. Scale is defined as reforms that were implemented at a national level:

Table 25: Summary of evidence on education-system scaling innovation

Sub-categories	Number of studies considered	Study Design	Outcomes considered
Contract teachers	8	1. Cluster RCT 2. Quasi experimental with simple differences	1. Teaching quality 2. Student achievement
Monetary incentive	5	1. Cluster RCT 2. Quasi experimental with simple differences	1. Teaching quality 2. Student achievement
Teacher certification	1	1. Quasi experimental	1. Teaching quality 2. Student achievement
Teacher training	1	1. Quasi experimental	1. Teaching quality 2. Student achievement

#### Contract teachers

##### International evidence:

A total of eight global studies that were conducted between 2003-2013 were included in our rapid review for contract teachers.

The review of four studies on contract-teacher interventions across various country contexts indicates a mixed impact on teaching quality, with three contexts showing positive effects, while one showed no effect (Bold et al., 2012; Muralidharan and Sundararaman, 2013). Regarding student achievement, six studies from different contexts reveal a mixed impact, with four indicating positive effects and two showing negative effects, while two showed no impact (Atherton and Kingdon, 2010; De Laat and Vegas, 2003; Goyal and Pandey, 2010; Bourdon et. al., 2005; Bourdon et al., 2007; Habib, 2010). Overall, there is modest evidence regarding the outcomes of this reform, suggesting that, in most cases, contract teachers' students perform equally well or even better than regular teachers and contract teachers are often considered better in terms of quality. However, concerns about diminishing returns and the transformation of contract teachers into quasi-regular teachers have been noted, resulting in limited differences in their effects.

## **Monetary incentives**

### **International evidence:**

A total of 5 global studies that were conducted between 2005-2014 were included in our rapid review for contract teachers.

Five studies investigate monetary incentives' effects on teacher quality and student achievement. One study demonstrates a positive effect on teaching qualifications, while modest evidence is found for student achievement (Rau and Contreras, 2012; Mizala and Romaguera, 2005; McEwan and Santibanez, 2005; Barrera-Osorio and Raju, 2010; Pugatch and Schroeder, 2014). However, teachers' unions can pose challenges to these reforms, although they can also facilitate change, as seen in the Chilean SNED intervention, underlining the importance of addressing initial resistance.

## **Teacher certification**

### **International evidence:**

**One** global study that was conducted in 2014 was included in our rapid review for teacher certification.

A study on teacher certification in Indonesia found no impact on teacher quality or student achievement, likely due to the programmes based on factors other than merit. The review highlights the need for pay raises for teachers to be tied to proven competencies and suggests that more recent, less corrupt implementations may yield better results. However, due to limited evidence from only one study, further research is needed to assess the intervention's effectiveness fully (Chang et.al., 2014). More research is needed in this area.

## **Teacher training**

### **International evidence:**

**One** global study that was conducted in 2009 was included in our rapid review for teacher training.

A study on an in-service training programme found that it improved student test scores, particularly for girls, and led to more effective pedagogical choices by teachers, positively impacting student learning (Piper, 2009). More research is needed in this area.

### **Evidence from Pakistan:**

Although there have been programmes aimed at improving education system scaling initiated mainly with funding support from foreign missions and multilateral donors, these programmes have not been evaluated rigorously and hence evidence gap exists from Pakistan. Learning at Scale report by Global





Centre for Development and Research Triangle Institute (RTI) international includes insights into some issu

**Discussion:**

Table 26: Summary of impact of education-system scaling innovation

Sub-categories	What has worked	What is unknown	Priority Issues	Possible Interventions
Contract teachers	Contract-teacher interventions can affect both outcomes include factors such as improved incentives, improved accountability, lower social distance, reducing the instances of multi-grade teaching and increased empowerment of local communities and school management	Stronger evidence in other context	Policy insights to improve the effectiveness of educational reforms at a national level	<ol style="list-style-type: none"> <li>Interventions should explore the influence of contextual factors, reform design, and implementation strategies</li> <li>Interventions that aim at measuring less tangible dimensions like conceptual change, to improve the alignment of policy decisions with research findings and promote more effective educational practices</li> </ol>
Monetary incentive	Monetary incentives could encourage different attitudes, as well as improve supply and deployment, while, at the same time, their positive effect could be hindered by corruption.	Stronger evidence in other context		
Teacher certification	Weak but positive evidence on certification leading to potentially improve the status of the teaching profession, as well as ensuring minimum standards	Robust evidence of teacher certification programmes	Insights into Impact of teacher certification on profession and practice for its scalability	
Teacher training	Trained teachers displayed greater knowledge, they did not appear to adopt more student-centred pedagogy as compared to untrained teachers	Stronger evidence in other context	Insights into demonstration of enhanced understanding of learner centered pedagogy by the	



teachers to scale this  
approach

In summary, despite huge global investment in education development there is limited evidence on understanding pilot- to- scale processes and how education systems in LMIC and specifically in Pakistan build and sustain education reform. Gaps in evidence exist about understanding the key features of interventions fit for scaling up and what challenges hinder the process of getting sustainably to scale and be sustained within the system. Rigorous evidence on the implementation of pilot interventions can provide insights for this under researched area and will be relevant not only for Pakistan but for comparable contexts as well.

### 3.3 Accountability and Decentralization

#### Improving school inspection systems

##### International evidence:

Table 27: Summary of evidence on improving school inspection systems

Sub-categories	Number of studies considered	Study Design	Outcomes considered
Issues in implementing evaluation systems and accountability mechanisms	17	1. Quasi experimental	1. Education quality 2. Student achievement 3. Teacher behaviour and attitudes

Research designs in studies examining the impact of school inspections on student achievement are more advanced, but they show small causal effects (Rosenthal, 2004; Luginbuhl et al., 2009). Studies with less advanced designs focus on school or classroom-level changes, providing evidence of school improvement and teacher behavioural change (Chapman, 2001; Matthews & Sammons, 2004; 2005; Ehren & Visscher, 2008; Dederling & Muller, 2011), where a causal relationship is not established but a plausible connection can be explained.

#### Issues in implementing evaluation systems and accountability mechanisms.

##### International evidence:

A total of six global studies that were conducted between 2013-2018 were included in our rapid review for contract teachers.

School accountability has been described in various ways, depending on the researchers' perspectives and contexts. Kim (2018) defines it as an educational reform that employs standardised criteria to assess student's achievement and learning outcomes scientifically, holding schools responsible for their results. It involves measuring student performance against predetermined standards (Ebbeler et al., 2016). Harris and Brown (2013) view school accountability as a process of communicating assessment results to parents and the community, while Ebbeler et al. (2016) describe it as a data-driven approach for reporting on school performance, using assessment data and internal evaluations. School accountability is also tied to inspection, serving as a means of holding schools accountable (Penninckx, 2017). Loh and Hu (2014) frame it as a collaborative effort among teachers to reflect on their teaching, and Gustafsson et al. (2015) stress its role in ensuring quality educational services.

The literature indicates that school accountability has had an impact on various aspects of school culture, prompting an exploration of the specific activities it affects.

### **Accountability and educational transformation:**

#### **International evidence:**

A total of two global studies that were conducted in 1995 and 2015 respectively were included in our rapid review for accountability and educational transformation.

Mawhinney's study in Ontario, Canada (1995) highlights the necessity of systemic accountability reform for reshaping the education system. This reform involves shifting the focus from schooling (the "old bottle") to learning, as emphasised by Pritchett (2015), to avoid wasting resources and human potential. In essence, accountability plays a crucial role in reshaping education towards a focus on high-quality instruction and assessments that promote genuine learning.

### **Accountability and classroom assessment:**

#### **International evidence:**

A total of two global studies conducted in 2017 and 2018 respectively were included in rapid review for accountability and classroom assessment/learning outcomes.

Some empirical studies have focused on the connection between classroom assessment and accountability. For instance, Rasooli et al. (2018) noted that accountability's growing importance in education systems has made fairness in student assessment at the classroom level a significant concern. Their findings reveal that accountability in education is linked to ensuring fairness in student assessment, which, in turn, supports student learning. This underscores how school accountability can enhance learning by promoting equitable classroom assessment. Additionally, Barnes et al. (2017) explored the perspectives of 179 K-12 teachers regarding assessment from a person-centred standpoint, finding that teachers consider classroom evaluation as valuable for accountability purposes, in addition to other objectives. This highlights the strong relationship between accountability and classroom assessment within schools.

### **Accountability and data use in education:**

#### **International evidence:**

A total of five global studies that were conducted between 2014-2018 were included in our rapid review for accountability and data use in education.

Research also delves into data utilisation in schools, crucial in the accountability era. Data promotes transparency (Smith & Benavot, 2019), supports accountability (Wayman & Jimerson, 2014), and

enhances student learning through data-driven decisions (Hoogland et al., 2016). However, data literacy is vital for informed decision-making (Kippers et al., 2018). Yet, empirical evidence reveals teachers often lack the necessary skills for effective data use (Kippers et al., 2018; Reeves & Chiang, 2018; Wayman & Jimerson, 2014).

**Accountability and teacher evaluation:**

**International evidence:**

A total of two global studies that were conducted in 2016 and 2020 respectively were included in the rapid review of literature on accountability and classroom assessment.

Research aims to enhance teacher quality through accountability. Paufler and Sloat's US study (2020) highlights the rising demand for teacher accountability tied to school district policies. Debates continue effective strategies for improving teaching and learning, necessitating a reassessment of assessment and accountability impact. This underscores the focus on teacher accountability while recognizing the importance of involving multiple stakeholders, such as parents, in fostering coherence, as suggested by Atuhurra (2016) through community engagement in school activities.

**Evidence from Pakistan:**

Evidence on contract teachers has been reviewed. Though there have been many interventions, at the system level, in Pakistan, we lack evidence on the effectiveness of these interventions in most cases.

**Discussion:**

Review of studies suggest implications of the shift in focus from school-level to teacher-level accountability and a positive impact on teacher motivation, job satisfaction, and educational outcomes. However, more research is needed to understand the implications of teacher-level accountability. For this purpose, possible interventions should aim to develop teacher evaluation systems that motivate educators and improve student outcomes.

Table 28: Summary of impact of improving school inspection systems

Sub-categories	What has worked	What is unknown	Priority Issues	Possible Interventions
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Issues in implementing evaluation systems and accountability mechanisms	Positive impact on teacher motivation, job satisfaction, and educational outcomes	In-depth understanding of multifaceted nature of accountability mechanisms and externally valid results	Comprehending the diverse perspectives of stakeholders concerning school accountability	Interventions include actively involving these stakeholders through surveys, focus groups, and interviews to collect their insights. The gathered feedback would then serve as the foundation for shaping accountability policies that are attuned to the unique needs of those involved.
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In summary, evidence on accountability as cited above is limited to a system level formalised form of accountability. However, in the current context of Pakistan where education is a devolved subject through 18th amendment in the Constitution of Pakistan, research on an expansive view of accountability for quality learning experience of all learners is required. An understanding of inhibiting as well as facilitating factors and drivers of accountability in the ecosystem of education at the community level (Westhorp et al 2014), its understanding at the school and teacher level (Jean-Francois et al 2023) and at the system level is needed to fill this critical evidence gap.

### Concluding Remarks

The Evidence Gap Map aimed at a rapid scoping of evidence available both globally and internationally on the critical educational issues that centre DARE-RC’s research agenda. While reviewing the evidence it also highlighted presence and absence of evidence on critical educational issues in Pakistan. A retrospective review of the above reported evidence also indicates to the expansive nature of this evidence gap mapping task through the researchers planning to undertake studies to generate further specific evidence.

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