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The impact of school interventions on educational equity and academic performance of
 economically disadvantaged children

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Contents

Contents	2
Acknowledgements	3
Abstract	4
Introduction	5
Aims and research questions	9
Method	10
Systematic Review	10
Information Sources.....	10
Eligibility Criteria	11
Search Limits.....	11
Inclusion and Exclusion Criteria.....	11
Search Strategy	12
Eligibility and Quality Assessment	12
Data analysis and extraction.....	15
Findings	15
Academic performance	16
Educational equity.....	22
Discussion	23
Recommendations for future policy, practice and research	27
Strengths and limitations	28
Conclusion	29
References.....	30
Appendix 1. Articles included in my research.....	40

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Abstract

Educational equity remains a critical challenge especially for students that came from economically disadvantaged backgrounds. These students often encounter substantial obstacles in obtaining high quality education. The numerous obstacles such as constrained financial means, cultural and linguistic disparities, health concerns and unstable home environment impede their academic performance and prospects for the future. We conducted a systematic review to investigate the effects of school based interventions namely classroom, after school and summer school interventions on the academic achievement and educational fairness of economically disadvantaged students. The systematic review revealed 19 studies that were used to answer our research questions. The majority of the studies were conducted in the USA and the rest across other continents such as Europe, Australia and Africa. The results showed that supportive school environments, implemented focused interventions and allocated resources should be a right of every student. In addition our research identified a lack in long term outcome evaluations. The majority of the interventions were short term initiatives providing solutions without aiming to sustain them long term. Consequently, our research offer insights for policymakers and educators to develop inclusive and fair educational practices that tackle complex issues that socioeconomically disadvantaged students face. The findings of our study emphasise the need for customised, empirically supported strategies to promote equal access to education and improve opportunities for disadvantaged young people.

Introduction

Educational equity is a pressing issue, especially for children from economically disadvantaged backgrounds (UNICEF, 2017; UNESCO, 2020). Even though education is acknowledged as a fundamental right in 1948 by the United Nations, certain children are confronted with limited opportunities to get high-quality education. More specifically, limited access to education leads to adverse effects on their general well-being and future prospects (Ijadi-Maghsoodi et al., 2017; Marks, 2020; Donalson et al., 2022). It is a well-known fact that students from low economic backgrounds face challenges that significantly impact their academic progress (Goldthorpe, 2014; UNESCO, 2020). Those challenges differ in the Global South than in the Global North. For instance, in the Global South, access to quality education is sometimes hindered by geographical barriers, financial constraints and inadequate infrastructure (Leal et al., 2021). Educational institutions in rural and low-income regions frequently lack sufficient resources, qualified educators and fundamental facilities (UNESCO, 2020). Furthermore, economic pressures force numerous children, especially in rural areas to participate in child labour, thereby restricting their school attendance and jeopardizing their opportunities for social mobility (OECD, 2018). Conversely, although public education systems are more prevalent in the Global North, socioeconomic inequalities persistently affect educational access and quality. Families in urban and marginalised areas are confronted with overcrowded classrooms, underfunded schools, and limited access to extracurricular programs important for better educational outcomes (OECD, 2018). Baugh et al., (2019) indicated that institutional frameworks helping on upward mobility through education, structural barriers such as inequitable access to higher education and escalating student debt have created significant challenges. Moreover, financial and structural barriers impact students from lower socioeconomic backgrounds (Balachandran et al., 2023). As a result, these barriers limit their ability to use educational opportunities for sustainable upward mobility (Baugh et al., 2019).

Students from economically disadvantaged backgrounds in marginalised regions in Global North experience substantial obstacles in accessing education as a result of their limited financial means. Consequently, these students are unable to obtain important resources such as textbooks and technology, which prevents them from participating in extracurricular activities and restricts their access to valuable learning opportunities (UNESCO, 2020). In addition, the financial limitations present in underprivileged communities made the problem

bigger, for instance, they made it difficult for schools to attract qualified educators or maintain their facilities up to date, leading to unequal educational opportunities (UNESCO, 2020). Financial hardships can also exacerbate chronic stress and create unstable living conditions, consequently affecting students' overall wellbeing and their capacity to focus in school (Goldberg et al., 2019). Students with cultural and linguistic disparities not only encounter financial difficulties but also encounter substantial obstacles in keeping up with their peers which leads to a widening educational disparity (Goldberg et al., 2019). In addition, students from economically disadvantaged backgrounds sometimes face caregiving responsibilities at home, which might additionally hinder their academic progress (UNESCO, 2020). The lack of supportive study environments and parental involvement intensifies these difficulties, reinforcing the need for comprehensive support systems to tackle these complex barriers to educational equity (UNESCO, 2020).

Research throughout the years has shown that those school environments which establish a supportive and nurturing setting, alleviate the adverse effects of poverty, social marginalisation, and other difficulties (Cassen et al., 2009; Jones et al., 2020; Fu et al., 2021). Marginalisation is illustrated by these studies in diverse circumstances. Cassen et al. (2009) for instance, demonstrated that students from low socioeconomic backgrounds and ethnic minorities in the UK experienced educational inequalities. More specifically, Cassen et al. (2009) discovered that providing supportive school environments help alleviate the negative effects of academic difficulties. Jones et al (2020) expanded this focus by investigating the way that educational institutions could mitigate social exclusion associated with race, disability and poverty especially in urban, underprivileged environments. Likewise, Fu et al. (2021) examined marginalised students, such as immigrants and ethnic minorities, emphasising the obstacles they encounter in education stemming from language, cultural and socioeconomic influences. However, there are still notable disparities between countries that persist, leading to a scenario in which many disadvantaged children face limited access to resources, cultural and linguistic obstacles and incidents of bullying (Arnold & Doctoroff, 2003). Promoting educational equity has never been challenging, yet it is more vital than ever (OECD, 2018; United Nations, 2015).

Furthermore, research highlights the restrictions of educational access in effectively achieving positive learning outcomes (OECD, 2018; 2019; Darling-Hammond et al., 2020). More specifically, studies on educational access indicate that widespread strategies are needed for educational reforms and they emphasise the significance of long-term vision,

consistent political dedication, innovative pedagogical practices, and sufficient financial resources (OECD, 2018; 2019; Darling-Hammond et al., 2020). Therefore, in order to ensure that all students are able to fully participate in valuable learning experiences, it is necessary to implement inclusive education (UNESCO, 2019). However, more is needed to integrate children physically; they must also be included in all aspects to ensure a high quality of learning (Shaeffer, 2019). This involves ensuring that teaching methods, school facilities, institutional values, the curriculum, recreational spaces, facilities and transportation are available to all children (UNICEF, 2017). It is understandable that policymakers are becoming aware of the unequal influence that socioeconomic background has on student performance (Li & Qiu, 2018; Heberle & Carter, 2020). Therefore, they create educational policies to specifically address these inequalities and advance educational equity. Equity-focused policies seek to reduce the disparity in academic performance among students from various socio-economic backgrounds (Li & Qiu, 2018; Heberle & Carter, 2020) by ensuring that student's achievements are based on their abilities rather than their social or economic conditions (OECD, 2018). Nonetheless, guaranteeing fair and equal access to education constitutes but a fraction of the solution. To adequately help students, particularly those from underprivileged families, it is crucial to tackle both the systemic obstacles to education and the individual and contextual influences that affect their academic success. The concept of resilience, especially academic resilience, is particularly relevant to our study.

There has been an active debate about the interpretation of the resilience term, particularly regarding whether resilience can be attributed to an inherent quality within us (something we are born with) or if it is a more complex concept. Resilience, which used to be seen as a collection of inherent personal traits that could predict positive adaptation, is now being studied with stronger focus on the environmental factors that contribute to resilience beyond the individual such as family, school and the broader community (Ungar, 2013). Therefore, the focus has shifted towards definitions emphasizing external processes and mechanisms. In recent times, the definitions of resilient approach have converged, focusing on strategies to enhance the chances of success for individuals facing significant challenges (Hart et al., 2016). The definition of academic resilience is widely accepted as a dynamic and broad developmental concept (Edwards et al., 2016). Academic resilience is defined by various definitions as both an individual's capacity and the required environmental and social conditions to overcome adversity that is perceived as a threat to educational development or achievement (Anagnostaki et al., 2016; Edwards et al., 2016; Hart et al., 2016). Academic

resilience is relevant for economically disadvantaged students facing challenges such as limited access to resources and unstable home environments (Edwards et al., 2016). The OECD (2018) emphasized that academic resilience plays an important role in promoting equity, and highlighted that school interventions foster these qualities in students (pp. 18-19). More specifically, school interventions empower disadvantaged students to develop the academic resilience necessary to succeed, regardless of their socio-economic background when focusing on factors such as goal setting, self-efficacy, and positive self-regulation (OECD, 2018, pp. 18-19; Daphne et al., 2022).

Taking into consideration the impact of school-based interventions on equity and inclusivity in education, policy makers should explore the identifiable patterns and inherent obstacles that impede the achievement of academic equity. Various papers focus on the individual level, evaluating the effects of factors such as gender, race, ethnicity, socioeconomic status, disability and language on the learning outcomes and opportunities of students (Bécares et al., 2015; Shifrer et al., 2011; Lindsay et al., 2022; Ali et al., 2023). A current OECD (2023) report demonstrates that educational institutions that adopt diverse approaches ensure that every child has equal access to high-quality educational resources and experiences. These interventions involve various strategies, such as allocating resources based on individual learning needs, creating positive and inclusive school environments, and using different teaching methods to accommodate students' diversity. Other studies demonstrate the institutional level, examining the impact of policies, practices and resources of educational systems and organizations on the influence of quality and accessibility of education for different groups of students (Charles & Harriett, 2017; Binning & Browman, 2020; Alam & Mohanty, 2023). For instance, there are non-instructional support services such as counselling and mental health resources and they encourage parental and community engagement (OECD, 2023). In addition, those studies that investigate the societal level, examine the effects of the broader context of culture, politics and economy on students' educational expectations and experiences (Gurr et al., 2021; Alam & Mohanty, 2023).

Interventions focused on equity can decrease the disparity in academic performance among students (Harackiewicz et al., 2016; Binning & Browman, 2020), however, further research is needed to determine their specific impact and identify the most effective implementation strategies.

[Aims and research questions](#)

There is a significant research gap in the academic equity discipline, specifically regarding the intersectionality of challenges experienced by students from economically disadvantaged backgrounds. Whilst prior research was focused on the effectiveness of school-based interventions in promoting academic equity, there is an urgent and pressing need to comprehensively understand the long-term impact of such interventions.

Scholars note that increasing social and economic disparities can exacerbate academic inequalities among students. While existing studies primarily focus on the short-term effects of school interventions (Kara et al., 2022), evaluations are required to identify effective models (Skivington et al., 2021). Consequently, analysing the influence of school-based interventions on educational trajectories over a period of time, is crucial. The restricted knowledge impedes the development of comprehensive strategies to achieve long-lasting educational equity.

The objective of this study is to examine the impact of school-based interventions on educational outcomes of economically disadvantaged students, providing insights for policy makers to implement more equitable educational practices. More specifically, we will systematically review existing literature to understand the relationship between school-based interventions and educational outcomes while emphasising the importance of educational equity. In light of these observations it seems relevant to investigate systematically the impact of school-based interventions such as matching resources within schools to students' learning needs, creating a positive and inclusive school climate, and implementing diverse learning strategies to address student diversity on the academic performance and educational equity of economically disadvantaged students. Thus, the current study will investigate the following research question:

“How effective are school-based interventions targeting economically disadvantaged students?”.

This study will be also guided by two sub-questions focusing on school-based interventions affecting academic performance and educational equity. These consist of: “How do school-based interventions targeting students from low economic backgrounds impact their academic performance?” and “How do school-based interventions targeting students from low economic backgrounds contribute to educational equity?”.

Furthermore, the findings of our study may have a significant impact on society in the long run. It can contribute to enhanced educational attainment, improved future employment

prospects, and well-being for young people by providing information on resource allocation, program development, and intervention strategies for youth facing economic adversity (Darling-Hammond et al., 2020). Furthermore, the empirical data obtained from our study can provide a solid basis for advocating the expansion of school-based interventions targeting vulnerable young people.

Method

Systematic Review

Our study followed the widely adopted reporting framework, Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA), developed in 2019 (Swartz, 2021). We replicated the findings as we found them crucial for our research. More specifically, it ensured transparency, credibility, reliability and a clear inclusion criterion (Belur et al., 2021; Swartz, 2021). Systematic review is characterized by detailed documentation of the process and analysis of the findings while making subjective decisions at different stages (Belur et al., 2021). To ensure replicability, it was crucial to provide detailed information about the coding and screening decisions that were made.

We chose Systematic Review over meta-analyses because it was based on the extensive range of interventions and programs identified in the preliminary search. We thought that constraining various actions into a comparable variable could be overly restrictive and may not accurately reflect their diversity. Therefore, a systematic review allowed for a more comprehensive examination of the spectrum of intervention variability across different forms. Following the PRISMA-P method as the reporting guideline ensured completeness and transparency throughout this study.

Information Sources

This study employed various academic databases and electronic literature sources. Specifically, this study utilized well-regarded academic databases such as LibGuides and Web of Science. Given the focus on pedagogy and educational sciences within the research

question and sub-questions, these areas were a particular focus with both LibGuides and Web of Science searches.

An extensive search strategy was employed across multiple databases to ensure the study's rigour and validity. ERIC is central to the search strategy as a critical resource for education-related literature. Additional databases relevant to the research question were included such as the Academic Search Premier, Primary Search, Psychology and Behavioural Sciences Collection, and SocINDEX. In addition, the Web of Science was utilized for its extensive collection of high-quality, peer-reviewed scholarly literature. This search engine was crucial for establishing the credibility and robustness of our research findings. The research strategy incorporated specific keywords and terms tailored to each database to ensure a comprehensive and relevant selection of sources.

Eligibility Criteria

Search Limits

The initial search strategy involved selecting a publication year range of 20 years, encompassing articles published between 2003 and 2023. This extended timeframe allowed for capturing developments in the field over a more substantial period.

Additionally, a language restriction was implemented, limiting the search to articles published in English. Moreover the initial search focused on peer-reviewed journal articles to ensure the accuracy and relevance of the selected articles. Other publication types, such as books, dissertations, and notes, are outside the scope of the initial search.

Inclusion and Exclusion Criteria

Our study included theoretical and empirical studies focusing on school interventions promoting equity and academic performance for low socio-economic children. The diverse methodological approaches included in the selected studies such as quasi-experimental studies, randomised controlled trials, case studies, program evaluations, longitudinal and narrative reviews - ensured well-rounded exploration of our research objectives. The variety of the studies included allowed us to examine both qualitative and quantitative perspectives, offering a holistic understanding of how different interventions impact disadvantaged

students. As a result the inclusion criterion ensured that our research objectives aligned with our chosen literature. We further limited our selection to articles written in English to guarantee consistency and broader accessibility. The publication year ranged from 2003 to 2023. It was set to capture a snapshot of relevant literature within the last two decades, considering the evolution of school intervention and its impact on disadvantaged children concerning education equity and academic performance. Conversely, studies that did not meet the theoretical or empirical criteria were excluded. This refinement ensured that the chosen literature was closely aligned with our research objectives.

Search Strategy

Four semantics have been identified to address the research question: school-based interventions, educational equity, academic performance and economically disadvantaged children. For each category, a combination of relevant keywords will guide the literature research. For instance, the category of “school-based interventions” will include keywords such as “school interventions” OR “school strategies” OR “school programs” OR “after-school programs” OR “mentoring initiatives” OR “targeted instruction”. For “educational equity” keywords such as “equity education” OR “inclusion” OR “diversity” OR “educational fairness” OR “educational justice” will be included. Similarly, “academic performance” will be searched using keywords such as “academic achievement” OR “academic performance” OR “academic success” OR “academic outcomes”. Finally, for “economically disadvantaged children” keywords such as “economically disadvantaged children” OR “low SES children” OR “poverty” OR “low income” will be utilized. The search will cover publications between 2003 to 2023 and will be limited to English-language publications. The exact keywords used in the LibGuides engine will also be employed in the Web of Science search engine.

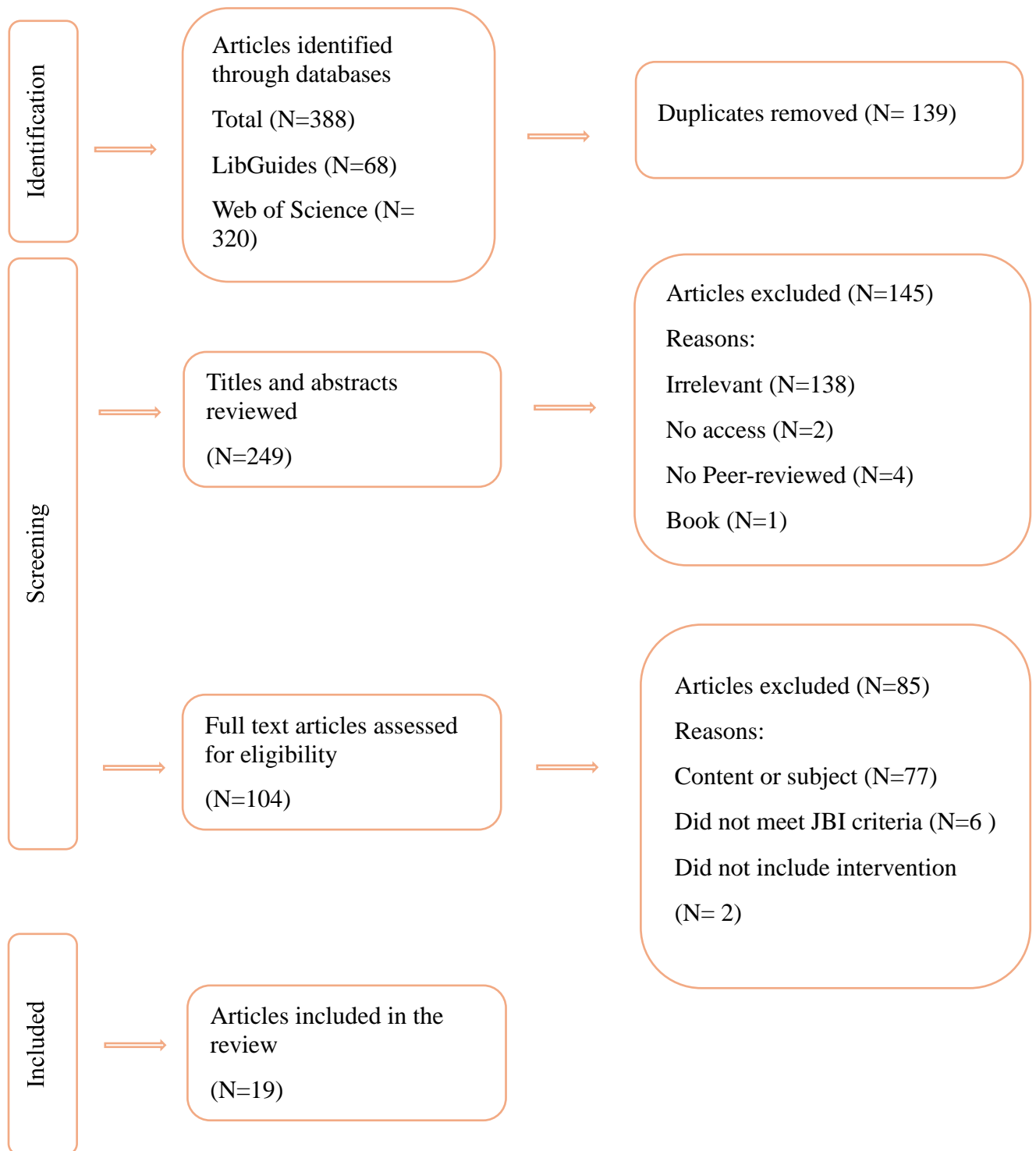
Eligibility and Quality Assessment

A series of steps were taken prior to finalizing the article selection. For further evaluation, various articles were identified using keywords and search limitations within Lib-Guides and Web of Science search engines. To ensure the included research’s credibility, applicability, and relevance, all retrieved studies were evaluated using JBI’s critical appraisal tool

(Aromataris et al., 2015). Upon applying the keywords and search limits, a total of 388 articles emerged from the databases. After deleting the duplicate articles (N=139) manually, a total of 249 articles remained to be screened. First we started screening titles and abstracts of these remaining articles to assess the relevance of the study. Articles were considered relevant when they provided us with knowledge to answer our research questions. In total 144 articles were excluded because they were irrelevant to our research or because they did not include any school-based intervention. The 105 remaining articles were placed in Excel and were read in their entirety. However, not all the articles meet all the requirements to be included in our study and most of them did not meet JBI appraisal tool criteria. Therefore, 19 articles were those that met the criteria to be included in our study. The exact steps of the screening and selection process can be seen in the 2020 PRISMA flow diagram (Figure 1).

Figure 1.

PRISMA 2020 Flow Diagram



Data analysis and extraction

We created an overview with all the relevant descriptive data derived from the included articles in an Excel sheet. The sheet included information of each article such as the author

and title, the country, the participants, the methodology, and the findings of each article relevant to our study. We used a deductive approach to analyse the articles and we organised them in three categories that were relevant to our study: types of intervention, duration of the intervention, the effectiveness of the intervention. For instance, findings such as short term intervention and long term intervention were placed under the category of duration of the intervention. Including the author and the title provided the necessary context and credibility to our research, helping us to identify the scope and focus of each study. The sources are clearly traceable and recognized because they contribute to the current body of knowledge relevant to our study. Moreover it was important to include the country where the research was conducted because the cultural, socio-political and economic context influence the study's findings. These factors affected participants' experiences and, in turn, helped us understand how these findings relate to our research.

The participant's demographic information, including age and specific group characteristics such as socioeconomic background was important to include because it determined that the findings were applicable to our study population. Students from low socio-economic backgrounds experience varying risk and protective factors so understanding these details allow us to contextualise findings within our study's framework.

Finally, methodological details, such as whether our study included qualitative or quantitative studies were crucial in assessing the validity and applicability of the research. Qualitative studies provide in depth insights, however lack generalizability while the quantitative studies that we included in our study offered a statistical rigour. Therefore, using both types of methodologies, we aimed to understand holistically the factors relevant to our research questions.

Findings

A detailed summary of the final sample of the studies is presented in Table 1 (referred to Appendix 1). The 19 scholarly articles are arranged in alphabetical order based on the surname of the first author. Each study specifies the data collection method employed such as quasi-experimental research, RCTs, quantitative research and mix methods. Furthermore the table provides information on the number of children taking part in these interventions. Some of them included teachers who took part in the study. Finally the pertinent results of each

study were classified into aforementioned categories such as type of intervention, duration of the intervention and measure of effectiveness of the intervention.

Synthesis of the findings

School-based interventions targeting economically disadvantaged students generally showed moderate to high levels of effectiveness in improving academic performance and contributing to educational equity. Programs such as the Project Excite achieved high effectiveness while others such as the Youth Scholars and TEAK Fellowship were rated as moderate. There were two interventions that did not specify their duration or their effectiveness. However, their successes varied significantly depending on the type of intervention, its design and implementation quality, and duration. More specifically, interventions that varied in duration, ranged from short-term programs such as an eight week intervention with weekly group sessions lasting from 2 to 2.5 hours, a five- week summer intervention and four month programs. Moreover, our systematic review included interventions that lasted more than one or two academic years, approximately two years or even three years programs. Furthermore, there were some interventions that were long term such as included five -year programs, the Upward Bound program, and multi-year programs such as Project Excite, which spanned six years and the TEAK Fellowship.

Academic performance

Many school-based interventions demonstrated a positive impact on academic performance, especially when they offered targeted and differentiated support to address specific learning needs of economically disadvantaged students. Out of 19 studies, 11 reported that classroom-based interventions enhanced the academic performance of economically disadvantaged students. These interventions were specifically developed to improve the educational settings for economically disadvantaged students during the actual school day. Moreover, based on these 11 studies the interventions frequently involved techniques such as differentiated instruction, in which teachers adapted their teaching approaches to suit various learning styles and competences. The Striving Readers program, for instance, was a literacy intervention implemented in the classroom aiming to improve reading abilities by means of organised and

focused practice. In particular, classroom-based programs included formative assessments which enabled the monitoring of student progress and timely adjustments of instructions (Bryan & Clegg, 2019). Educators used quizzes, observations and student input to pinpoint areas of difficulty for students and offered focused assistance (Bennett, 2011). Moreover, classroom-based interventions also included collaborative learning strategies in which students collaborated in groups to address complex problems and accomplish assignments (Le et al., 2018). Findings from our systematic review showed that such programs and initiatives not only facilitated the development of critical thinking and communication abilities in students but also cultivated feelings of community and support among their peers. Initiatives such as Deep Roots: Civil Rights integrated culturally sensitive instructional approaches, were successful in tackling academic difficulties and strengthening the conducive learning environment (Peterson, 2014).

The 5-E Lesson Plan for instance, emphasised inquiry-based learning, hands-on activities and professional development for teachers, and showed significant gains in science achievement among disadvantaged students in Texas. Jackson & Ash (2012) demonstrated that this initiative focused on teachers' expertise and tailored instruction and had helped their professional development. Additionally, the study measured the impact on student achievement using a high stake science test (TAKS). The article showed that the 5-E lesson plan approach was an effective intervention as economically disadvantaged students showed significant gains in passing rates and scores on the TAKS science test. The study also highlighted that the 5-E Lesson Plan was effective for English Language learners (ELLs) and economically disadvantaged students who often faced greater educational challenges. Similarly, the Dynamic Approach to School Improvement (DASI) was an approach to school improvement grounded in the dynamic model of educational effectiveness. The dynamic model developed by Creemers and Kyriakides (2008) emphasised two key dimensions of effectiveness: quality and equity. The authors indicated that DASI operated at multiple levels as they believed that effectiveness is influenced by factors at the student, classroom, school and system levels. Therefore, all these factors are needed to be addressed to promote quality and equity in education. Recognizing that schools vary in their effectiveness, DASI promoted tailored improvement strategies for each school. Kyriakides et al. (2019) argued that schools guided by an Advisory and Research Team were useful to assess education's current status regarding school policy for teaching and the School Learning Environment (SLE). Therefore, this assessment included focused strategies that were designed through an action plan aimed

at improving equity and equality in education. As a result, DASI initiative had a positive effect on mathematics performance on students in all countries involved (Cyprus, England, Greece and Ireland) and had a reduced impact of SES on achievement gap.

Another classroom-based intervention with a positive impact on academic performance were school gardens that improved academic achievement and helped to narrow achievement gaps across racial and socioeconomic backgrounds (Ray et al., 2016). School gardens initiatives are known for creating experiential learning environments that resonate with other types of interventions. Ray et al. (2016) used data from the DC CAS standardised tests for schools from fifth grade. They discovered that Black and lower-income students were more likely than White and Hispanic students to underperform on maths, reading, and science tests. Research showed that students who attended schools with gardens were more likely to perform at the proficient or advanced levels on standardised tests (Ray et al., 2016). Apart from school garden interventions, movement-based classroom interventions were also found to reduce sedentary behaviour and encourage active learning (Allee et al., 2024). In particular, movement-based interventions improved academic outcomes and reduced educational disparities in Title I schools in Florida. Allee et al. (2024) demonstrated that students in movement-based classrooms showed greater academic growth in reading compared to those in traditional classrooms. Moreover, in Title I Kindergartens, play-based pedagogy showed greater reading gains compared to direct instruction (Karyn et al., 2021). The article compared the impact of these two educational methods on receptive vocabulary and academic achievement and provided insights about the effectiveness of these interventions. Karyn et al. (2021) suggested that interactive, student centred teaching methods were more effective than the traditional direct instructional education. Results showed that students in a play-based classroom had greater reading gains $F(1,16) = 58.133, p < .001$ than students in didactic classroom $F(1,8) = 6.692, p = .032$ (Karyn et al., 2021).

The ASIP Program (Achieving Success Identity Pathways) impacted the academic performance and integrated identity and personal growth for students from low income families that needed support. Participants from low economic backgrounds who followed the ASIP program had a positive effect on grades, credits earned and attendance rates (Howard & Solberg, 2006). Specifically, exposure to five to six ASIP activities resulted in a 33% improvement in class passed rates. Consequently, the program had an increase from 60% of classes passed before intervention to 83% passed after intervention. The Accelerated Learning Program (ALP) for Out of School children in Nigeria further highlighted the

importance of targeted support for vulnerable students. The ALP intervention led to significant improvements in literacy and numeracy and social emotional skills (Diazgranados et al., 2022). The results demonstrated improvement in letter recognition, reading skills, and mathematical abilities (Diazgranados et al., 2022). Similarly the 4Rs Program (Reading, Writing, Respect and Resolution), integrated a literacy and social emotional learning approach which improved both academic skills and equity, particularly among economically disadvantaged students in New York City (Jones et al., 2011). Last, The Head Start REDI program targeted language and social emotional skills, showed moderate improvements in key developmental areas for economically disadvantaged children in the USA. The intervention resulted in significant improvements in seven out of eleven targeted skill areas related to language and social - emotional development (Bierman et al, 2008). The effect sizes for these skills ranged from 0.15 to 0.39 indicating moderate to small improvements over the control group.

However, the success of these interventions was highly dependent on the teacher's proficiency in implementing them and the accessibility of essential resources as noted with programs such as Striving Readers, where implementation fidelity was a key determinant of its success (Peterson, 2014). The MATC Promise Program, a free – college initiative that offered last dollar tuition only scholarships, demonstrated minor improvements in GPA for certain student subgroups. In particular, Monaghan & Coca (2023) indicated that while there was a slight increase of GPA for the Promise cohorts, the effect was minimal. Conversely, the program negatively affected the attendance rates with a reduction of 1,8% points in attendance for eligible cohorts compared to prior years. Moreover, the analysis showed that the Promise program led to a small increase in the proportion of students meeting the 2.0 GPA threshold in 12th grade compared to the baseline. The estimated effect was that the share of students achieving at least a 2.0 GPA was 1.8 to 2.2 percentage points larger than it would have been without the promise. The study also demonstrated a decrease in attendance rates which had a mixed effect on academic performance. Monaghan & Coca (2023) discussed treatment effect heterogeneity, which showed that the Promise program had varying effects across different subgroups. Positive and significant effects on GPA were found for males, Asians, students eligible for free lunch, special education students and current ELL students. However, the program's impact on attendance was almost uniformly negative across all subgroups.

Another school-based intervention that impacted the academic performance of disadvantaged students were after-school interventions. After-school interventions provided valuable support to students facing academic challenges by offering additional assistance beyond regular school hours. Among the 19 studies reviewed, only six specifically focused on after-school programs. These studies highlighted the interventions' role in providing academic tutoring and enrichment activities such as sports, arts and social skills development. Programs such as FAST (Families and Schools Together) by McDonald et al. (2006) aimed to improve academic performance and social skills by fostering a supportive network of parents, teachers and peers. Moreover, involving parents and caregivers in the intervention process improved its impact (Delgado-Gaitan, 1991; O'Connor et al., 2009). Therefore, as Delgado – Gaitan (1991) indicated many years ago family engagement was a key factor in student success. More recently, Gil et al. (2021) similarly demonstrated that family support has a mediating role in the relationships between students' skills and academic achievement. One of the main benefits of after-school interventions was their provision of a safe and structured environment for children during the crucial hours immediately following school hours (Durlak et al., 2010). Research showed that students who engage in after school programs frequently demonstrate improved academic performance, higher attendance rates, and increased levels of involvement in school activities (Jenson et al., 2018). However, the effectiveness of after-school interventions vary significantly based on factors such as the program quality, students participation and family involvement. Catalano et al. (2004) found that well developed programs that emphasise relationship-building and individualised support were more likely to achieve positive outcomes. After-school interventions such as Project Excite, Young Scholars, and TEAK fellowship played a vital role in improving standardised test scores, performance in enrichment activities, and an increased number of minority students qualifying for advanced maths classes. Programs such as Excite Intervention were not just about extending the school day; they were about transforming the educational experiences and outcomes for marginalised students (Horn et al., 2021). More specifically, Project Excite addressed systemic disparities and provided a safe and supportive environment for students where they could thrive (Olszewski-Kubilius, 2006; Olszewski-Kubilius & Clarenbach, 2014). Furthermore, the E-LINCs program re-engaged students who were previously disengaged by incorporating science experiments and digital projects, making learning enjoyable and relevant (Zyngier, 2017). It has been proven that hands-on activities allowed students to explore scientific concepts in an interactive and engaging manner, helping students to understand abstract ideas (Schwichow et al., 2016). Moreover, Schwichow et al.

(2016) indicated that such experiential learning can significantly improve students' attitudes toward science. E-LINKCs program also involved pre-service teachers and community volunteers aiming to foster community cultural wealth and to improve students' confidence and academic outcomes. Our systematic review also included Striving Readers, a traditional prescribed literacy intervention that was less effective. More specifically the Striving Readers program did not improve student motivation to read or significantly impacted their reading progress, partly due to implementation issues and lack of fidelity to the model (Peterson, 2014). In contrast, culturally responsive, arts integrated programs such as Deep Roots demonstrated significant positive impacts on student engagement, academic performance and personal development among economically disadvantaged students. More specifically, Deep Roots aimed to address educational inequalities by integrating curricula that reflected students' backgrounds and experiences. As a consequence this program not only improved grades, attendance and disciplinary records but also fostered an inclusive learning environment (Peterson, 2014). Moreover, after-school governmental interventions such as TRIO programs, consisted of three interventions, the Upward Bound, the Educational Talent Search and the Upward Bound Math and Science. These after-school interventions prepared the low-income and underrepresented students for college (Cowan & Pitre, 2009). The TRIO program provided resources and support, and bridged the gap between high school and higher education, aiming to level the playing field for students that lack access to such opportunities. Although Cowan & Pitre (2009) found that the academic performance outcomes were mixed for the students that were participating in the TRIO programs. The students consistently showed high rates of college entry and completion.

Besides the two previous school-based interventions, studies have suggested that summer school-based interventions had the ability to alleviate the "summer slide", a phenomenon characterised by students losing a portion of their academic progress they achieved during their academic year (Borman et al., 2006). Borman et al. (2006) suggested that summer programs helped to preserve and enhance students' academic abilities. More specifically, summer initiatives included a combination of scholastic teaching and extracurricular activities to increase the level of the engagement and enjoyment in the learning process for students (Olszewski-Kubilius & Clarenbach, 2014). In our systematic review four were the interventions that met the requirements. The SMYSP, a 5-week summer residential program, targeted low-income high school students interested in science and health professions. Specifically, Winkleby et al. (2009) demonstrated that the SMYSP program significantly

improved educational outcomes, with 84% of students participating in this program earning a four-year college degree. The program particularly targeted underrepresented minorities such as African American, Latino, and Native American students. Similarly, the Teach Baltimore initiative illustrated moderate yet statistically significant improvements in reading comprehension and overall reading achievement among students who consistently attended the three summer programs. Borman & Dowling (2006) indicated that the intervention effectively reduced summer learning loss. Lastly, programs such as Project Excile, Young Scholars and TEAK Fellowship positively impacted academic performance by increasing placement rates in honours-level courses and enrolment in AP (Advanced Placement) and International Baccalaureate (IB) programs.

Educational equity

Our review investigated the contribution of school based interventions on educational equity. We revealed that school-based interventions significantly impacted educational equity by bridging opportunity gaps for students from economically disadvantaged backgrounds. The majority of the interventions reviewed provided resources and support to low-income students.

The Dynamic Approach to School Improvement (DASI) and the GEAR UP program, for instance, improved both the quality of education and equity because they addressed systemic disparities and promoted self-regulated learning to low income students (Kyriakides et al., 2019; Ellis & Helaire, 2023). Interventions recognized that low-income students often required more than just academic instruction they also need help building non-cognitive skills and resilience. Furthermore, the GEAR UP program (Gaining Early Awareness and Readiness for Undergraduate Programs) focused on self-regulated learning and academic behaviours. The program showed that non-cognitive skills improve gaps in academic performance (Ellis & Helaire, 2023). Specifically, Ellis & Helaire (2023) argued that the amount of time students spent in college readiness activities offered by GEAR UP strongly impacted their self-efficacy.

Other programs, such as Project Excite and the TEAK Fellowship, had also a positive effect on educational equity. They provided access to advanced coursework and college preparatory opportunities for underrepresented minority students. Both Programs effectively targeted the structural barriers that often prevented low income and minority students from enrolling in advanced courses (Olszewski -Kulibius, 2006). Additionally, culturally responsive programs

such as Deep Roots: Civil Rights, integrated the backgrounds and experiences of students into the curriculum. They provided an inclusive environment and improved both engagement and performance among economically disadvantaged students (Peterson, 2014). Therefore, culturally sensitive interventions improved equity as they connected academic content to students' lived experiences.

However, the extent to which these programs achieved education equity varied. The DASI initiative was effective in improving academic performance but it was less successful in closing the achievement gap related to gender and ethnicity (Kyriakides et al., 2019). Additionally, the MATC Promise Program, while slightly improving academic performance for certain disadvantaged groups, did not enhance overall educational engagement and equity due to the negative effect on attendance (Monaghan & Coca, 2023). Howard & Solberg (2006) did not explicitly address educational equity in their article, in a broad sense, it was implied that the ASIP program contributed to educational equity by providing targeted support to students from low - income backgrounds helping them to improve their academic outcomes. Consequently, even though interventions can improve academic outcomes, they do not always address the broader, systemic inequities in education.

Discussion

Our study gathered and evaluated current educational strategies that aimed to mitigate achievement disparities among socioeconomically disadvantaged students. More specifically, we sought to provide policy makers with options to increase the school outcomes for socioeconomically disadvantaged youth, thereby improving their life outcomes. Our research question "How effective are school-based interventions targeting economically disadvantaged students?" has been addressed through two sub questions.

The answer to the first sub question required a distinction of school based interventions into three categories such as classroom-based, after-school and summer-school interventions, impacting the academic performance of socioeconomically disadvantaged students. Each of these school-based interventions offered a different approach addressing academic challenges and improving performance among those students. Therefore, they contributed to answering

our first sub question which was the effectiveness of these interventions on the academic performance of students coming from disadvantaged households.

The second sub question sought to answer whether three types of interventions contributed to educational equity. More particularly, these school-based interventions contributed to educational equity by attempting to bridge the opportunity gap among students coming from disadvantaged backgrounds and those that were privileged.

The results of our study revealed a wide range of interventions ranging from highly specialised efforts targeting essential learning skills such as reading, writing, and comprehension to more about school reforms in the educational system. The aim was to gather all research to assess these approaches enabling comprehensive analysis based on empirical evidence. Results showed that strategies that were customised to economically disadvantaged students demonstrated greater effectiveness (Herbaut & Geven, 2020). Upon examining the actions that resulted in more significant changes, it became evident that the most targeted interventions aimed at addressing certain challenges that low economically students faced, often a fundamental aspect of learning such as reading abilities and early mathematical understanding, have been shown to be more successful (Björklund et al., 2020; Dunkan et al., 2007; Mulligan et al., 2020) For instance, classroom based programs such as 5-Lesson Plan and DASI program emphasised tailored instruction and professional development, leading to significant academic successes in science and mathematics achievement among disadvantaged students (Jackson & Ash, 2012; Kyriakides et al., 2019). In addition, after school programs such as Project Excite and TEAK Fellowship provided targeted support that led to improved standardised test scores and increased participation in advanced academic opportunities for minority and low income students (Olszewski-Kubilius & Clarenbach, 2014; Hurd & Deutsch, 2017).

The review from the 19 articles showed that many interventions depended on resource availability and teachers' expertise. Studies have shown that the efficacy of classroom-based strategies such as individualised instruction and formative assessments was significantly dependent on teachers' competencies and the accessibility of essential resources (Andersson & Palm, 2018; Ozan & Kincal, 2018; Morris & Gill, 2023). Consequently, under-resourced schools that lacked those materials and where most of the students from low income backgrounds attend, faced serious challenges (Elias & Haynes, 2008). These challenges reflected broader structural issues in educational systems, where schools with the highest

needs frequently had the least ability to implement and sustain effective interventions (Darling-Hammond et al., 2020; Gretter et al., 2019). This illustrates that resource allocation plays an important role in determining the success or failure of educational initiatives targeting low income students (Walker, 2012).

Moreover, our revision identified a limited number of interventions that had minimal or no positive effects. More specifically, the MATC Promise Program that offered last dollar tuition scholarships, had minimal effect on GPA and a negative effect on attendance rates (Monaghan & Coca, 2023). Initiatives such as MATC Promise and Trio Programs aimed to improve educational outcomes for economically disadvantaged students, but those programs were not successful (Herbaut & Geven, 2020; Smith, 2023). One possible explanation for this result is the disparity in curriculum requirements and the complexity of the intervention that lead to low academic achievement (Herbaut & Geven, 2020; Waters et al., 2021). Scholarship recipients come from under-resourced schools that provide them with less challenging curriculum (Holzer & Baum, 2017). As a result students were unprepared for academic demands of higher level colleges (Holzer & Baum, 2017; Oreopoulos, 2021). Furthermore, they struggled to meet the expectations of more demanding programs, as a result they underperformed (Holzer & Baum, 2017; Herbaut & Geven, 2020; Waters et al., 2021). The complex nature of interventions such as the combination of financial assistance with mentorship, tutoring and other supportive measures (family support) also created challenges in the educational preparedness of students (Holzer & Braum, 2017, p.38). Research suggested that interventions should comply with student's specific needs as they can become overwhelming instead of beneficial (Holzer & Baum, 2017; Oreopoulos, 2021). Additionally, TRIO programs showed high rates of college entry and completion but had mixed results in terms of academic performance. A possible explanation for these results as a follow up research indicated was the lack of awareness among eligible students (Smith, 2023). Another possible cause was that TRIO programs were not available on all schools and campuses (Smith, 2023).

Additionally, our review revealed that sustainability and the long term impact of these school-based interventions on academic performance, is a critical issue to be discussed. We revealed that the majority of the programs, such as after school and summer school interventions, had a short duration. While we found that there were improvements in academic performance, there was little evidence on the long term effect of these programs on academic performance and equity (Meyer & Van Klaveren, 2013). Consequently, the effects

of such interventions tend to diminish if they were not sustained through ongoing support (Meyer & Van Klaveren). Kara et al. (2022) argued that existing studies primarily focused on the short-term effects of school interventions. In addition, Skivington et al. (2021) claimed that evaluations are required to identify effective models that show positive results on the durability of the short-term interventions. Consequently, sustainability of school based interventions should be a primary focus of policymakers and researchers because the initial benefits of short term interventions diminish without sustained engagement (Meyer & Van Klaveren, 2013).

Furthermore, a critical note that should be added to our results was the school climate. Research has shown that a positive school climate significantly affects the academic performance and wellbeing of socioeconomically disadvantaged students (Berkowitz, 2021; Dimitrova et al., 2018). However, our review revealed that achieving and maintaining a positive school climate was challenging especially for schools where the majority of students came from disadvantaged backgrounds. Berkowitz (2022) demonstrated that these schools face challenges such as overcrowding, lack of resources and higher rates of teacher turnover. The students attending these schools struggle to maintain positive relationships due to larger class sizes and higher stress levels among teachers (Ramberg et al., 2020). As a result students do not receive the adequate attention they need from their teachers, leading to disengagement and lower academic performance. On the other hand, economically disadvantaged students have positive academic outcomes when they interact with supportive teachers (Pope & Miles, 2022). More specifically, they indicated that a positive school climate helps students engagement, motivation and a sense of belonging and as a result these positive characteristics improve their academic outcomes (Pope & Miles, 2022).

Finally, although evidence showed that school based interventions successfully improve academic performance of economically disadvantaged students, not all studies established fundamental educational equity. For instance Kyriakides et al. (2019) indicated that targeted interventions improve academic outcomes, such as higher maths scores, but bridging achievement inequalities influenced by factors such as gender or ethnicity continue to be challenging. Educational equity requires broader systemic and structural factors such as funding, access to experienced teachers and social determinants of education (Wanti et al., 2022).

Recommendations for future policy, practice and research

As we have mentioned throughout our study the majority of the school-based interventions were short-term interventions. Research has shown that short term interventions do not maintain the same effectiveness as long term interventions (Bailey et al., 2020; Meyer & Van Klaveren, 2013). Bailey et al. (2020) discovered that some interventions that target psychological outcomes such as skills, interests and beliefs tend to fadeout. Specifically they argued that the reason that fade out occurs in educational interventions is because learning is not transferable. Much of what students learn in schools requires the interaction of various skills. Therefore, policy makers should focus on creating interventions that do not target one discrete skill but focus several sets of skills. Furthermore, policy makers should allocate sustained funding to interventions that demonstrate effectiveness over extended periods. Such interventions were included in our review, for instance, Upward Bound and Project Excite which showed a positive effect on educational outcomes of economically disadvantaged students. Policymakers can also create more hours available for teachers to provide extra instructions to all students that struggle as it has been shown that has positive effects on their academic performance (Andersen et al., 2016).

In practice, educators and school administrators should implement differentiated student - centred instructional strategies such as inquiry based learning and collaborative group work (Langelaan et al., 2024). Diversity in education is undeniable, and variations among students are inherent in classroom environments (Belfi et al., 2012). As it was mentioned throughout the study, urban settings are more relevant to our study as they frequently feature a diverse student demographic. Most of the students have diverse sociocultural backgrounds, home environments, languages and numerous associated traits that affect “ *the quality of life and the dynamics of power and privilege*” (Langelaan et al., 2024; Matsko & Hammerness, 2014). Educators should acknowledge and accommodate different learning styles and instructional responses to help students grow and reduce the achievement disparity among students (Tomlinson et al., 2003). Furthermore, schools should foster environments that promote social-emotional learning and self-regulation to improve academic performance and equity (Gregory & Fergus, 2017). Research has shown that students participating in SEL (social-emotional learning) programs show significant academic gains (Durlak et al., 2011). More specifically, they reviewed 213 school based SEL programs and found an increase in

academic performance on those that participated compared to those students who did not participate in the SEL programs.

Future research should focus on systemic barriers such as funding disparities, teacher quality and curriculum inequalities that impede educational equity (Aiston & Walraven, 2024).

Research has shown that unequal distribution of school funding was a major factor contributing to achievement disparities (León & Valdivia, 2015). Whereas schools that were better equipped to provide high -quality instruction and extracurricular programs benefited students academically (Chapman et al., 2023). Moreover, it has been derived from our review of the importance of teacher experience. Studies have demonstrated that teacher quality is one of the most important school related factors influencing students' achievement (Gerritsen et al., 2017). Finally, Schot & Steinmuelle (2018) demonstrated that research should explore policy evaluations to determine the real - world effectiveness of large scale educational reforms aiming at improving educational equity.

Strengths and limitations

The review possessed some strengths and weaknesses. One of the strengths is the research approach employed to identify a maximum number of relevant articles answering our research questions. Utilizing articles from two different academic databases has yielded a comprehensive overview on our subject of research. The analysis uncovered prevalent trends of classroom based interventions having moderate influence on educational performance. The information presented in this review can serve as the foundation for future investigation on this subject matter.

Nevertheless, our systematic review is subjected to certain restrictions. We alone carried out the extraction and screening procedures. This process was thoroughly documented and supported, but no other researcher participated. Hence, there could exist a subjectivity bias. Furthermore, the systematic review exclusively comprised articles originally published in English language. Therefore, our review excludes potentially pertinent articles written in languages other than English. One further constraint is that the review included journal articles. Our systematic review excluded all other publications such as books, dissertations and notes, Consequently, it is plausible that pertinent information is absent.

Conclusion

Our goal was to find out “How effective are school-based interventions targeting economically disadvantaged students?”. Even though the majority of the interventions we reviewed had a positive effect on educational outcomes and equity for economically disadvantaged students, they alone cannot address the persistent inequalities within educational systems, especially when most of the interventions had short durability. Furthermore, a lack of research into the subject of sustainability of educational interventions was exposed. Consequently, future research should improve the knowledge and understanding of this matter. Researchers should consider conducting longitudinal studies to present more reliable results and draw stronger conclusions.

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Equity and Social and Economic Justice for Children from “Communities at Promise”: An Australian Perspective. *International Review of Education*, 63(1), 9–28. <https://doi-org.proxy-ub.rug.nl/10.1007/s11159-017-9621-x>

Appendix 1. Articles included in my research

Authors and title	Type of research	In which country or countries was the study carried out?	Participants	Types of interventions	Measure of Effectiveness of the intervention	Duration of the intervention	Findings relevant to the research questions	
							<i>Academic performance</i>	<i>Educational equity</i>
Allee, K. A., Garcia, J. M., Roberts, S. K., & Clark, M. H. (2024). Sitting Less for Success: Reducing Sedentary Behaviors to Increase Kindergarten Achievement. <i>The Journal of School Health</i> , 94(2), 117–127. https://doi.org/10.1111/josh.13409	Quasi-experimental research	Florida	Participants consisted of 23 kindergarten students	Movement - based classroom intervention	Moderate to high	One academic year	The article demonstrated that interventions focused on movement within schools effectively improved academic performance and educational equality among economically disadvantaged students. Specifically, these interventions reduce sedentary behaviour and encourage more active learning environments. The students in the movement -based classrooms showed greater academic growth particularly in reading compared to those in the more traditional classroom.	

<p>Bierman, K. L., Domitrovich, C. E., Nix, R. L., Gest, S. D., Welsh, J. A., Greenberg, M. T., Blair, C., Nelson, K. E., & Gill, S. (2008). Promoting Academic and Social-Emotional School Readiness: The Head Start REDI Program. <i>Child Development, 79</i>(6), 1802–1817. https://doi.org/10.1111/j.1467-8624.2008.01227.x</p>	<p>RCT</p>	<p>USA</p>	<p>4-year-old children</p>	<p>The Head Start REDI Program(Research-based Educational Developmental Intervention) program</p>	<p>High</p>	<p>One academic year</p>	<p>The article demonstrated that REDI intervention was effective in targeting economically disadvantaged students. The intervention resulted in significant improvements in seven out of eleven targeted skill areas related to language and social - emotional development. The effect sizes for these skills ranged from 0.15 to 0.39 indicating moderate to small improvements over the control group. Moreover, the program provided targeted support to economically disadvantaged students within the Head Start Framework, aiming to increase educational equity.</p>
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<p>Borman, G. D., & Dowling, N. M. (2006). Longitudinal Achievement Effects of Multiyear Summer School: Evidence from the Teach Baltimore Randomized Field Trial. Educational Evaluation and Policy Analysis, 28(1), 25–48. https://doi.org/10.3102/01623737028001025</p>	<p>Longitudinal Study. A randomized field trial</p>	<p>USA</p>	<p>686 students from 10 high-poverty, urban schools.</p>	<p>Summer school program. The three-summer Teach Baltimore initiative</p>	<p>Moderate</p>	<p>3 year time period</p>	<p>Results showed disparities in the learning paths of the two groups, particularly in the areas of reading comprehension and overall reading achievements. However, it is important to note that these effects are subtle and complex. More specifically, the intervention had a statistically significant positive impact on the learning rates of students who consistently attended the program which were referred to as compliers. Moreover, those who followed the Teach Baltimore program showed higher rates of learning. The effect sizes observed in the group of individuals who complied with the intervention were moderate yet statistically significant. Additionally, the article's discussion part emphasised the enduring disparities in academic performance between students from low-income backgrounds and their wealthier peers. The study indicated that interventions such as Teach Baltimore can effectively reduce summer learning loss, which disproportionately impacts students from low socioeconomic backgrounds. Therefore, the program helps to promote educational equity by addressing seasonal disparities and</p>
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offering additional learning opportunities, which will lead to a reduction in the achievement gap over time.

<p>Cowan Pitre, C., & Pitre, P. (2009). Increasing Underrepresented High School Students' College Transitions and Achievements: TRIO Educational Opportunity Programs. NASSP Bulletin, 93(2), 96–110. https://doi.org/10.1177/0192636509340691</p>	<p>Program evaluation</p>	<p>USA</p>	<p>Students</p>	<p>Governmental TRIO Programs (Upward Bound, Educational Talent Search and Upward Bound Math and Science)</p>	<p>Moderate</p>	<p>Upward Bound is a Long-term program that serves students throughout high school starting from 9th or 10th grade and continuing until highschool. For ETS vary since it targets students from middle school through highschool. Last regarding the Upward Bound program, it serves students from highschool</p>	<p>The article discussed the structure and aims of TRIO programs into preparing low -income and underrepresented students for college. The Upward Bound program for example was found to have higher rates of college entry and completion among participants compared to non participants from similar backgrounds. Regarding the impact on academic performance there were mixed results. There were studies that reported no significant effect on high school grades or preparation but others found positive effects on course taking patterns in maths and science. Trio programs aim to bridge the gap between high school and college for economically disadvantaged students by providing resources and support to students who do not have any access to such opportunities.</p>
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<p>Diazgranados Ferráns, S., Lee, J., Ohanyido, C., Hoyer, K., & Miheretu, A. (2022). The Cost-Effectiveness of an Accelerated Learning Program on the Literacy, Numeracy and Social-Emotional Learning Outcomes of Out-of-School Children in Northeast Nigeria: Evidence from a Mixed Methods Randomized Controlled Trial. <i>Journal of Research on Educational Effectiveness</i>, 15(4), 655–686. https://doi.org/10.1080/19345747.2022.2037799</p>	<p>Mixed Methods Randomized Controlled Trial</p>	<p>Nigeria</p>	<p>9–14 year-old OOS (out of school) children. The program supported a total of 33,883 OOS children in 400 communities in Borno and Yobe from 2017 through 2020.</p>	<p>Accelerated Learning program (ALP) targeting out of school (OOS) children in Nigeria</p>	<p>Moderate to high</p>	<p>4 months</p>	<p>The article explored the Accelerated Learning Program (ALP) that specifically focuses on educating Out-of-School (OOS) children in Nigeria. The study outlined the impact of interventions on literacy, numeracy, and social-emotional learning (SEL) outcomes. The results demonstrated substantial improvement in letter recognition, reading skills, and mathematical abilities. Moreover, the study used an equity lens to identify existing baseline equity gaps between different subgroups of students by gender, displacement status and MTL and the degree to which the intervention had differential effects on them and contributed to decreased inequalities. For instance, for gender, they found that girls and boys had the same literacy, numeracy and SEL skills at baseline and that the intervention helped both groups develop literacy and numeracy skills, however, it was significantly more beneficial for girls in decreasing hostile attribution bias.</p>
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<p>Ellis, J. M., & Helaire, L. J. (2023). Self-Efficacy, Subjective Norms, Self-Regulated Learning: An Application of the Theory of Planned Behavior With GEAR UP Students. <i>Education and Urban Society</i>, 55(7), 844–875. https://doi.org/10.1177/00131245221092744</p>	Panel survey	USA	118 students	<p>GEAR UP a school based intervention on economically disadvantaged students focusing on their self regulated learning (SRL) and academic behaviors.</p>	Moderate	During the academic trimester	<p>The article demonstrated that increased participation in GEAR UP activities positively impacted students' self efficacy and adoption of SRL norms. Moreover, the article highlighted that the GEAR UP program helped in bridging opportunity gaps by improving non-cognitive skills and urged involvement from key adults such as parents, teachers to contribute to educational equity.</p>	
<p>Howard, K. A. S., & Solberg, V. S. H. (2006). School-Based Social Justice: The Achieving Success Identity Pathways Program. <i>Professional School Counseling</i>, 9(4), 2156759X0500900. https://doi.org/10.1177/2156759X0500900407</p>	Program evaluation	USA	2.500 9th -10th grade high school students	<p>ASIP program (Achieving Success Identity Pathways). Has four components "Hear my story", "ASIP Navigator", "Charting Your Course" and "Action Theater"</p>	High	The second and third marking periods of the academic semester.	<p>The article evaluated the impact of the ASIP program on students and indicated that it was implemented with significant positive outcomes. For instance students exposed to the ASIP curriculum showed improvements in grades, credits earned and attendance rates. Specifically, exposure to five to</p>	<p>The article did not mention educational equity.</p>

	<p>six ASIP activities resulted in a 33% improvement in class passed. The article showed that there was an increase from 60% of classes passed before intervention to 83% passed after intervention.</p> <p>Moreover, students who experienced seven to eight ASIP classroom activities demonstrated an average improvement of 52% in end of semester grades (GPA of 1.38 prior to intervention and GPA of 2.1 after intervention).</p>	
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<p>Jackson, J. K., & Ash, G. (2012). Science Achievement for All: Improving Science Performance and Closing Achievement Gaps. <i>Journal of Science Teacher Education</i>, 23(7), 723–744. https://doi.org/10.1007/s10972-011-9238-z</p>	<p>Tiered study</p>	<p>Texas</p>	<p>Allen Elementary and Bell Elementary 5th-graders</p>	<p>5-E lesson plan (Inquiry Science Instruction)</p>	<p>Moderate to high</p>	<p>Three years</p>	<p>The article described a project designed to improve science achievement among elementary students, including economically disadvantaged students. More specifically, the project utilised a specific lesson plan format (5-E) that emphasised inquiry-based learning and activities. Moreover teachers received professional development focused on science content knowledge, TEKS alignment and integrating vocabulary instructions. Additionally, the study measured the impact on student achievement using a high stake science</p>	<p>The article did not mention educational equity.</p>
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<p>test (TAKS). The article showed that the 5-E lesson plan approach was effective intervention as economically disadvantaged students showed significant gains in passing rates and scores on the TAKS science test. The study also highlighted these interventions were effective for English Language learners (ELLs) and economically disadvantaged students who often faced greater educational challenges.</p>	
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<p>Jones, S. M., Brown, J. L., & Lawrence Aber, J. (2011). Two-Year Impacts of a Universal School-Based Social-Emotional and Literacy Intervention: An Experiment in Translational Developmental Research. <i>Child Development</i>, 82(2), 533–554. https://doi.org/10.1111/j.1467-8624.2010.01560.x</p>	<p>RCT</p>	<p>New York City</p>	<p>1,184 children and 146 teachers</p>	<p>The 4Rs Program (Reading, Writing, Respect and Resolution): 4Rs Program is a universal school based intervention targeting literacy and social emotional learning</p>	<p>Moderate to high</p>	<p>Two - year evaluation</p>	<p>The article reports on academic skills and standardised maths and reading achievement. The data included on students' performance are from New York State standardised tests and teacher reports on academic skills.</p>	<p>The article did not mention educational equity.</p>
<p>Karyn A. Allee-Herndon, Sherron Killingsworth Roberts, BiYing Hu, M. H. Clark, & Martha Lue Stewart. (2021). Let's Talk Play! Exploring the Possible Benefits of Play-Based Pedagogy on Language and Literacy Learning in Two Title I Kindergarten Classrooms. <i>Early Childhood Education Journal</i>, 1. https://doi.org/10.1007/s10643-021-01158-5</p>	<p>Quasi-experimental research</p>	<p>Florida</p>	<p>30 kindergarten students</p>	<p>Play based pedagogy and Direct instruction in Title I kindergarten classroom</p>	<p>High</p>	<p>It does not specify</p>	<p>The article compares the impact of these two educational methods on receptive vocabulary and academic achievement, which gives insights into the effectiveness of these interventions. Results showed that students in a play based classroom had greater reading gains $F(1,16) = 58.133, p < .001$ than students in didactic classroom $F(1,8) = 6.692, p = .032$. The authors suggested that these two school based interventions increase educational equity (Karyn et al., 2021, p. 127).</p>	

<p>Kyriakides, Charalambous, Creemers, & Dimosthenous. (2019). Improving quality and equity in schools in socially disadvantaged areas. <i>Educational Research</i>, 61(3), 274–301. https://doi.org/10.1080/0131881.2019.1642121</p>	<p>Experimental study</p>	<p>Cyprus, England, Greece and Ireland</p>	<p>5560; student ages 9–12 years</p>	<p>The Dynamic Approach to School Improvement (DASI). The intervention was designed to promote both the quality and equity of education, particularly in schools serving economically disadvantaged students.</p>	<p>Moderate</p>	<p>Two academic years</p>	<p>The article evaluated the effectiveness of DASI in improving student's learning outcomes in mathematics. The article found that students in schools using DASI intervention achieved higher levels of mathematics performance compared to students in control schools. Moreover the researchers found that DASI intervention affected educational equity positively as the intervention led to a smaller impact of SES on students' achievement.</p>
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<p>McDonald, L., Moberg, D. P., Brown, R., Rodriguez-Espiricueta, I., Flores, N. I., Burke, M. P., & Coover, G. (2006). After-School Multifamily Groups: A Randomized Controlled Trial Involving Low-Income, Urban, Latino Children. <i>Children & Schools</i>, 28(1), 25–34. https://doi-org.proxy-ub.rug.nl/10.1093/cs/28.1.25</p>	<p>A Randomized Controlled Trial</p>	<p>USA</p>	<p>Latino children</p>	<p>The FAST intervention. This intervention is a family focused program designed to support children's academic and social development by involving the family in their education.</p>	<p>Moderate</p>	<p>Eight weeks and families participated in weekly group sessions that lasted about 2 to 2,5 hours</p>	<p>The article described a study on an after-school, multifamily support group program (FAST) designed to increase parent involvement in schools and improve children's wellbeing. The study found that the FAST program resulted in significantly better academic performance and increased social skills in the classroom compared to the control group. Moreover the FAST program showed positive effects on academic performance of Latino children with low socioeconomic backgrounds. Teacher evaluations indicated that students assigned too FAST had significantly better academic performance compared to the control group two years after the intervention. Finally, the article also suggested that by increasing parent involvement and improving social skills, the FAST program contributed to educational equity.</p>
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<p>Monaghan, D. B., & Coca, V. M. (2023). Do Community College “Promise” Programs With Low-Bar Merit Criteria Improve High School Performance? <i>Community College Review</i>, 51(4), 509–537. https://doi.org/10.1177/00915521231181941</p>	<p>Quasi-experimental study</p>	<p>USA</p>	<p>80,814 students</p>	<p>“Free-college” program: “The MATC Promise”. The MATC Promise is a privately funded, last-dollar, tuition-only scholarship available first to the entering class of Fall 2016</p>	<p>Moderate</p>	<p>Short-term</p>	<p>The findings indicated that while there was a slight increase of GPA for the Promise cohorts, the effect was minimal. Conversely, the program negatively affected the attendance rates with a reduction of 1,8% points in attendance for eligible cohorts compared to prior years. Moreover, the analysis showed that the Promise program led to a small increase in the proportion of students meeting the 2.0 GPA threshold in 12th grade relative to the baseline. The estimated effect was that the share of students achieving at least a 2.0 GPA was 1.8 to 2.2 percentage points larger than it would have been without the promise. However, this positive impact on GPA is contrasted by a decrease in attendance rates suggesting a mixed effect on academic performance overall.</p> <p>Last, the study discussed treatment effect heterogeneity, which showed that the Promise program had varying effects across different subgroups. Positive and significant effects on GPA were found for males, Asians, students eligible for free lunch, special education students and current ELL students. However, the program's impact on attendance was almost</p>
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uniformly negative across all subgroups. This indicated that while the program had slightly improved academic performance for certain disadvantaged groups it did not enhance overall educational engagement and equity due to the negative effect on attendance.

<p>Olszewski-Kubilius, P. (2006). Addressing the Achievement Gap between Minority and Nonminority Children: Increasing Access and Achievement through Project Excite. <i>Gifted Child Today</i>, 29(2), 28–37. https://doi.org/10.4219/gct-2006-198</p>	<p>Project Evaluation</p>	<p>Chicago</p>	<p>Participants became eligible for the program from 3rd grade.</p>	<p>Project Excite was developed and implemented specifically to raise the achievement of gifted minority students in a large suburban school district of Chicago so that they could qualify for advanced programs and accelerated tracks in high school in mathematics and science.</p>	<p>Moderate</p>	<p>5 years</p>	<p>The article demonstrated that there was an increase in the number of minority students qualifying for advanced maths classes, improvements in standardised test scores and overall good performance in enrichment activities. This project was designed to contribute to educational equity by increasing access to advanced educational opportunities for minority students who are economically disadvantaged.</p>
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<p>Olszewski-Kubilius, P., & Clarenbach, J. (2014). Closing the Opportunity Gap: Program Factors Contributing to Academic Success in Culturally Different Youth. <i>Gifted Child Today</i>, 37(2), 103–110. https://doi.org/10.1177/1076217514520630</p>	<p>Narative Review</p>	<p>USA</p>	<p>Students</p>	<p>Project Excite, Young Scholars, and TEAK fellowship</p>	<p>Excile program : High effectiveness Youth scholars: Moderate TEAK fellowship: Moderate</p>	<p>Project Excite is a multi-year intervention that stars in third grade and continues through eighth grade covering six years. Young Scholars intervention is also a multiyear intervention that spans several grade levels starting from early elementary school. TEAK fellowship also is a multi-year intervention.</p>	<p>The article indicated that these interventions have a positive effect on academic performance. For instance there were higher placement rates in honours-level courses, increased enrollment in AP courses and International Baccalaureate program. Moreover, these programs provide opportunities for advanced learning students who lack access.</p>
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<p>Peterson, D. S. (2014). A Culturally Responsive Alternative to “Drill and Kill” Literacy Strategies: Deep Roots, Civil Rights. <i>Multicultural Perspectives</i>, 16(4), 234–239. https://doi.org/10.1080/15210960.2014.951489</p>	<p>Case study</p>	<p>USA</p>	<p>High school students</p>	<p>Striving Readers a prescribed curriculum and Deep Roots: Civil Rights, a culturally responsive program</p>	<p>Moderate</p>	<p>Five years</p>	<p>The article illustrated that traditional prescribed literacy interventions such as Striving Readers were less effective. More specifically the Striving Readers program did not improve student motivation to read or significantly impact their reading progress, partly due to implementation issues and lack of fidelity to the model. Culturally responsive, arts-integrated programs (Deep Roots) for economically disadvantaged students had a significant positive impact on student engagement, academic performance and personal development. As it was mentioned before, the Striving Readers program did not show a significant improvement in reading scores whereas the Deep Roots program showed improved grades, attendance and disciplinary records. Last, the article argued that traditional intervention did not address the root causes of educational inequality for low-income students. Deep Roots aimed to address these inequalities by providing a curriculum that reflected students' backgrounds and experiences. This program therefore contributed to educational equity by improving the educational experiences and outcomes of the students that participated.</p>
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<p>Ray R., Fisher D.R., & Fisher-Maltese C. (2016). SCHOOL GARDENS in the CITY: Does Environmental Equity Help Close the Achievement Gap? Du Bois Review, 13(2), 379–395. https://doi.org/10.1017/S1742058X16000229</p>	<p>Quantitative research</p>	<p>Washington, DC</p>	<p>Fifth graders</p>	<p>School gardens intervention</p>	<p>Moderate</p>	<p>It does not specify</p>	<p>School gardens are positively associated with higher academic performance in maths, reading and science particularly for economically disadvantaged students. Moreover, school gardens help to reduce the achievement gap between students of different racial and socioeconomic backgrounds.</p>
<p>Winkleby, M. A., Ned, J., Ahn, D., Koehler, A., & Kennedy, J. D. (2009). Increasing Diversity in Science and Health Professions: A 21-Year Longitudinal Study Documenting College and Career Success. Journal of Science Education and Technology, 18(6), 535–545. https://doi-org.proxy-ub.rug.nl/10.1007/s10956-009-9168-0</p>	<p>Longitudinal Study</p>	<p>USA</p>	<p>24 students</p>	<p>The Stanford Medical Youth Science Program (SMYSP), a 5-week summer residential program for low-income high school students</p>	<p>High</p>	<p>Five week summer intervention (short - term)</p>	<p>The SMYSP was described as a successful intervention targeting low income high school students with an interest in science and health professions. The results showed that 84% of the participants earned a 4 year college degree which was significantly higher than the general population for similar demographics. Moreover the article highlighted that the SMYSP significantly improved educational outcomes for underrepresented minorities, particularly African American, Latino and Native American students.</p>

<p>Zyngier, D. (2017). How Experiential Learning in an Informal Setting Promotes Class Equity and Social and Economic Justice for Children from “Communities at Promise”: An Australian Perspective. <i>International Review of Education</i>, 63(1), 9–28. https://doi-org.proxy-ub.rug.nl/10.1007/s11159-017-9621-x</p>	<p>Case study</p>	<p>Australia</p>	<p>40 students</p>	<p>After-school E-LINCs programme. The programme’s conceptual framework of Connecting-Owning-Responding-Empowering (CORE)</p>	<p>Moderate</p>	<p>Approximately two years</p>	<p>The article indicated that the E-LINC program was effective in engaging students who were previously disengaged. It mentioned that students had positive outcomes regarding their school attendance, retention, and standardised test results. Furthermore, the program led to increased engagement and interest in academic activities. The students showed improved performance in homework, and class activities, and their confidence and willingness to learn were enhanced. The integration of activities such as science experiments and digital projects helped make learning enjoyable and relevant. Thus, students had better academic outcomes. Last, regarding the equity relevance of this article, the E-LINC program fostered inclusive and culturally responsive teaching practices. More specifically they involved pre-service teachers and community volunteers. It emphasised the value of community cultural wealth and provided opportunities for students to engage in these learning experiences.</p>
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