IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.53
Volume 4, Issue 1, August 2024

The Dynamics of Pre-Primary Education

Damanjit Kaur
Ph.D Scholar
SNDT Women's University, Mumbai, Maharashtra

Abstract: *The National Education Policy 2020 completes four years this year. Among its areas of focus has been the introduction of Pre-Primary Education , also referred to as early childhood education across the country, for a young child 's holistic development. Pre-Primary education is meant for children under the age of 6 years .As a child 's brain develops the fastest between 0-5 years, pre-primary education works as a catalyst in developing cognitive, emotional, and basic literacy and numeracy skills, thereby preparing students to move to formal schooling and later stages of education.*

Keywords: National Education Policy

I. INTRODUCTION

The National Education Policy 2020 completes four years this year. Among its areas of focus has been the introduction of Pre-Primary Education , also referred to as early childhood education across the country, for a young child 's holistic development. Pre-Primary education is meant for children under the age of 6 years .As a child 's brain develops the fastest between 0-5 years, pre-primary education works as a catalyst in developing cognitive, emotional, and basic literacy and numeracy skills, thereby preparing students to move to formal schooling and later stages of education.

Pre-Primary education in India was formally included in the purview of the country 's education policy fairly recently when, in 2018-19, provisions were made to allocate funds for this purpose with the launch of Samagra Shiksha scheme. Since then , even though several states started introducing pre-primary classes , the extent to which it was offered varied widely.

Prior to this, the Early Childhood Care and Education (ECCE) Policy, 2013 talked about achieving'' …..holistic development and active learning capacity of all children below six years of age. The ECCE has been implemented through the country's Anganwadi Centre (AWC) System. However ,pre-school education has been a small component of the services offered by an Anganwadi , whose key focus is nutrition and immunization services .

The idea of Universalisation of Pre-Primary education was yet to get a country wide policy push ,till the NEP 2020 was released .It emphasized pre-primary education as an integral part of India 's public school system.

Post NEP 2020,in order to facilitate state governments to implement pre-primary education recommendations of the policy in government schools, the ministry of Education (MoE) released a plan in April 2021 called Students's and Teacher 's Holistic Advancement through Quality Education (SARTHAQ). SARTHAQ outlines the implementation tasks, stakeholders responsible , targeted outputs , and dedicated timelines for the tasks to be achieved.

As mentioned previously. India has relied on its extensive Anganwadi system to implement ECCE , which also caters to children in 3 to 6 years age bracket , alongside younger children, women and adolescent girls.

Pre-primary education aims to provide services to children in similar age-group such as those going to Anganwadis.

The responsibility of construction of pre-primary school be given to government schools or should it be the responsibility of the AWC .The AWC need to be well-equipped to implement pre-primary education .The Anganwadi worker needs to be trained to teach the pre-primary syllabus.

The three types of scenarios persist for a Pre-primary section

1. A primary school without a pre-primary section but which has an AWC inside or outside the school premises.
2. Primary school with an AWC inside or outside the school premises.
3. Primary school with pre-primary grade, but without an AWC.

Funds are channelized through the erstwhile Integrated Child Development Services (ICDS) scheme .Pre-Primary Education is funded by the school education department primarily through the Samagra Shiksha scheme and recently through the Strengthening Teaching -Learning and Results for States (STARS) project in some states.

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.53
Volume 4, Issue 1, August 2024

There is confusion regarding the funding aspect of Pre-Primary education as AWCs and pre-primary schools actually co-exist on the ground.

The mid-day meal schemes are also an important aspect of the Pre-Primary students.The training of Anganwadi is also a crucial aspect for the implementation of Pre-Primary syllabus.If a school has Pre-Primary classes then should there be a new cohort of teachers specially trained for teaching Pre-Primary classes.

In Himachal Pradesh , for example, the AWCs and pre-primary schools are functioning as two different entities with minimal interaction. This creates a point of concern as a large number of villages or localities do not have schools with pre-primary grades.Hence challenges remain whether children in AWCs will be able to attain the same level of preparedness as compared to other children studying in a pre-primary school before entering Grade 1.

Rajasthan . on the other hand , has been able to achieve some kind of convergence between two departments – Education and WCD.Not only are Anganwadi workers being trained by the Education Department on the pre-primary syllabus, but they also being assigned a primary school teacher , called as 'Mentor teacher' to support them in teaching pre-primary syllabus to children in the Anganwadi .Apart from Samagra Shiksha , Rajasthan has been using part of STARS funds for training new teachers , training of AWWs , teaching-Learning material kits, and creating teaching modules for teachers.

Punjab. Unlike Rajasthan , has built pre-primary classes in all primary schools by now. In places where the AWCs are located inside the school premises , the same students are enrolled in the AWC as well as in the pre-primary class. This double enrollment helps the students avail the benefits of both schemes linked to nutritional services and pre-primary education.

Whether it is about creating pre-primary infrastructure in primary schools or the utilization of Anganwadi structure, a substantial amount initial investment is required to ensure pre-primary education to each child as envisaged by the NEP, 2020. At the same time , the implementation challenges highlighted above need to be resolved at the state -level through continued consultation .While some states have made progress in this direction , many others are still in the process of figuring it out.

Quality early childhood education can make a significant contribution to the physical, psychomotor, cognitive , social and emotional development of the child, including the acquisition of Languages and early literacy.

The First eight years of a child 's life is a period of tremendous growth and development . Brain connections multiply exponentially in the first three years and the potential for ensuring optimal development is very high upto age eight .It is imperative that that this true ' window of opportunity ' is fully used and strengthened to ensure long term benefits, not just for each individual child 's development but also for larger community. A large proportion of development of human brain takes place after birth as a result of interaction with the environment -the impact of early experience has a greater influence on development than heredity.

Early Childhod Care and Education (ECCE) in the Indian context is defined as care and education of children from birth to eight years.

The programme covered under this are Early stimulation programmes through creches /homes stimulation for 0-3 year olds.

ECE ie Early Childhood education programmes for 3-6 year olds (as seen in anganwadis, balwadis, nurseries, pre-schools,kindergartens. Preparatory schools etc).

Early Primary Education Programmes as a part of schooling for 6-8 year olds.

In the dynamic landscape of early childhood education, pre-primary schools play a pivotal role in laying the foundation for a child's academic and social development. While traditional methods have long been a staple in classrooms, the educational paradigm is shifting towards more interactive and engaging approaches. One such approach gaining prominence is activity-based learning. This point emphasises the importance of activity-based learning in pre-primary schools and how it shapes a child's holistic growth.

Understanding Activity-Based Learning:

Activity-based learning revolves around the principle of learning by doing. It transcends the conventional rote memorization and encourages children to actively participate in various hands-on activities. This approach involves a

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.53
Volume 4, Issue 1, August 2024

range of activities such as games, puzzles, role-playing, experiments, and creative projects that stimulate different facets of a child's development – cognitive, emotional, social, and physical.

Cognitive Development:

Activity-based learning is a powerful tool for enhancing cognitive development in pre-primary school children. Unlike passive learning methods, active engagement fosters critical thinking, problem-solving skills, and a deeper understanding of concepts. Activities that involve sorting, matching, and categorizing help children develop their cognitive abilities and improve their memory retention.

Moreover, activities like science experiments and educational games provide a practical understanding of theoretical concepts, making learning more tangible and memorable. These hands-on experiences promote a deeper engagement with subjects like mathematics and science.

Emotional Development:

Pre-primary school is a crucial phase where children begin to understand and regulate their emotions. Activity-based learning provides a safe and supportive environment for children to express themselves freely. Creative activities like drawing, painting, and storytelling allow them to communicate their feelings and thoughts, fostering emotional intelligence.

Furthermore, activities that involve cooperative play, such as team-building exercises or collaborative art projects, contribute to emotional development by promoting a sense of belonging and teamwork. These experiences build emotional resilience, preparing children to navigate the complexities of relationships.

Social Development:

Activity-based learning encourages social interaction and collaboration among children. Group activities promote teamwork, communication, and interpersonal skills. As children engage in role-playing or collaborative projects, they learn to negotiate, share responsibilities, and appreciate diverse perspectives.

In addition to these collaborative activities, field trips and excursions provide opportunities for children to interact with the external environment, developing social awareness and adaptability. The diversity of social interactions in various settings enriches their understanding of the world around them.

Physical Development:

The importance of physical activity in the early years cannot be overstated. Activity-based learning incorporates various gross and fine motor skill activities that contribute to a child's physical development. Games that involve running, jumping, or simple exercises enhance motor coordination, balance, and strength.

Creative activities like arts and crafts also contribute to fine motor skill development as children manipulate small objects and refine their hand-eye coordination. A well-rounded physical development during the pre-primary years lays the foundation for a healthy lifestyle and overall well-being.

Cultivating a Love for Learning:

One of the most significant advantages of activity-based learning is its potential to ignite a passion for learning in young minds. By making learning enjoyable and engaging, children are more likely to develop a positive attitude towards education. Activities that tap into a child's natural curiosity and creativity create a positive association with learning, making them more enthusiastic and motivated learners.

Teachers play a crucial role in fostering this love for learning by creating an environment that encourages exploration and discovery. When children are excited about learning, they are more likely to actively participate in class, leading to better retention of knowledge and a lifelong love for education.

Implementing Activity-Based Learning in Pre-Primary Schools:

For activity-based learning to be effective, it requires a well-thought-out implementation strategy. Teachers need to design activities that align with the curriculum, taking into consideration the diverse learning styles and needs of the

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.53
Volume 4, Issue 1, August 2024

children. Additionally, the learning environment should be conducive to exploration, with ample resources and materials that support hands-on learning.

Professional development for teachers is also crucial to ensure they are well-equipped with the skills and knowledge needed to integrate activity-based learning into their classrooms. Collaboration among educators, parents, and administrators is key to creating a holistic educational experience that nurtures a child's overall development.

In conclusion, activity-based learning in pre-primary schools is a transformative approach that goes beyond traditional methods, offering a holistic and child-centric educational experience. By fostering cognitive, emotional, social, and physical development, activity-based learning prepares children for a lifetime of learning and growth. Investing in early childhood education that prioritizes hands-on, interactive learning is an investment in the future, shaping well-rounded individuals who are not only academically proficient but also socially and emotionally resilient.

A school's success is determined by its ability to create an environment for Learning.

In the dynamic landscape of education, where innovation and adaptability are key, integrating technology into pre-primary education is not just an option but a necessity. The formative years of a child's education lay the foundation for their lifelong learning journey. As educators, it's our responsibility to ensure that this foundation is solid, nurturing, and equipped with the tools necessary for success in the digital age.

As we delve into the realm of pre-primary education, it's essential to understand the significance of utilizing technology effectively in the classroom. Gone are the days when traditional teaching methods alone sufficed. Today, with the rapid advancement of technology, educators have an array of resources at their disposal to engage young minds and enhance learning experiences.

Technology offers a myriad of benefits in the pre-primary classroom, enriching the learning environment and fostering holistic development. Interactive educational apps and software cater to diverse learning styles, allowing children to explore concepts through immersive experiences. From interactive games that reinforce numeracy and literacy skills to virtual simulations that bring science and social studies to life, technology opens doors to endless possibilities.

Moreover, integrating technology in pre-primary education promotes active participation and collaboration among students. With interactive whiteboards, tablets, and educational software, educators can create dynamic lessons that encourage student engagement and interaction. Collaborative activities facilitated by technology instill essential skills such as communication, teamwork, and problem-solving from an early age.

Furthermore, technology serves as a powerful tool for personalized learning in the pre-primary classroom. Adaptive learning platforms analyze individual student data to tailor instruction according to each child's unique needs and pace of learning. By providing personalized learning experiences, technology empowers educators to address diverse learning abilities effectively and ensure that no child is left behind.

However, while embracing technology in pre-primary education, it's crucial to strike a balance and maintain a holistic approach to learning. Traditional teaching methods, such as storytelling, play-based learning, and hands-on activities, are equally essential for fostering creativity, critical thinking, and socio-emotional development in young children.

In essence, integrating technology into pre-primary education is not about replacing traditional teaching methods but complementing them to create a comprehensive learning experience. By harnessing the power of technology, educators can cultivate a dynamic and engaging learning environment that caters to the needs of every child.

It is necessary to recognize the importance of equipping educators with the knowledge and skills to effectively integrate technology into pre-primary education. The comprehensive pre-primary teacher training programs provide aspiring educators with the tools and strategies necessary to harness the power of technology in the classroom.

Through hands-on training, practical workshops, and expert guidance, teacher educators learn to leverage technology to enhance learning outcomes and create meaningful learning experiences for young children. Their commitment to excellence in pre-primary teacher training ensures that educators are well-prepared to meet the evolving needs of today's learners and make a positive impact in the field of education.

In conclusion, integrating technology into pre-primary education holds immense potential to transform learning experiences and prepare young children for success in the digital age. By embracing technology responsibly and incorporating it into a holistic approach to teaching and learning, educators can unlock new possibilities and empower children to reach their full potential.

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.53
Volume 4, Issue 1, August 2024

Friedman et al.1 modelled within-country inequalities in primary, secondary, and tertiary education and forecast progress towards education-related targets of the Sustainable Development Goals (SDGs). They found that most countries are on track to achieve near-universal primary education by 2030 and schooling gender gaps are closing, but parts of sub-Saharan Africa, North Africa and the Middle East still lag far behind. Progress in secondary education is less promising, with only 10% of adolescents in poorer countries completing 12 schooling grades. An Editorial on the paper (*Education must fix its data deficit)*2 notes that data on disparities have played substantial roles in driving gains achieved to date1. It calls for more data to identify which groups of children need most help, and urges further progress in tracking what children learn in addition to their completed schooling grades.

SDG 4's goal is to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. Friedman et al.'s1 paper addresses two SDG 4 targets: 4.1 (free, equitable and quality primary and secondary education) and part of 4.3 (ensuring that men and women have equal access to affordable and quality tertiary education). However, their paper entirely overlooks Target 4.2, which states that by 2030, all girls and boys should have access to quality early childhood development, care and pre-primary education so that they are ready for primary education. As we enter the last decade of the SDG agenda, it is crucial that we hold the world accountable for achieving this target because it is foundational to all learning and the achievement of SDG 4 in totality. SDG 4.2 can only be achieved by collecting and analysing data to track progress and disparities in early-life education, and highlighting governmental actions to accelerate progress by addressing gaps.

The 1990 Jomtien World Declaration on Education for All stated that "Learning begins at birth", and the importance of child development in preschool years has been included in all international declarations since, including the 2000 Dakar Framework for Action: Education for All, the Millennium Development Goals and the SDGs. Given strong evidence that foundations for adolescent and adult human capital are established in the early years, we can no longer consider education to begin when children start primary school. It is critical to bear in mind the long-term importance of the enormous learning that occurs—or does not occur—from before birth to when children walk into their first-grade classrooms. Inequalities are evident from the start and generally very large by the time children enter formal schooling systems.

Promoting early learning outcomes and mitigating inequities requires tracking children's progress or development from their very first years of life. SDG 4.2 indicators focus on the proportion of children aged 24–59 months who are developmentally on track in health, learning and psychosocial wellbeing, by sex (4.2.1) and participation rates in organized learning (1 year before the official primary entry age), by sex (4.2.2) The 2020 UN Secretary General's Report6, based on 74 countries with comparable 2011–2019 data, states that ~70% of children 3–4 years of age are on track developmentally in at least three of the following domains: literacy-numeracy, physical development, social-emotional development and learning. Participation in organized learning programmes 1 year before the official age of primary school entry grew steadily from 62% in 2010 to 67% in 2018. Variation among countries remains wide, with values ranging from 9% to nearly 100%. Of 16 countries with trend data since 2010, the largest progress was observed in Iraq, Laos and Sierra Leone, but no progress or even reduced coverage in Cameroon, Chad or Swaziland7. Further, large socioeconomic and rural-urban within-country disparities are found for preschool children

The importance of early childhood development at home, child day care and in pre-primary education is evidently seen. The evidence is incontrovertible: learning begins at and even before birth. Brain development is extremely rapid and learning takes place as children interact with adults who facilitate, name and interpret their experiences. Children's brain volumes double during their first year and reach 80–90% of their adult sizes by age 39, and learning progresses rapidly across all modalities For example, foetuses and newborns distinguish their mothers' voices from others and, within days after birth, associate auditory and visual information together, such as mothers' voices with their faces

Not only are children actively learning about people and objects around them from birth, but they are learning *how* to learn, mainly from other people. Child-directed speech, emotional attunement between caregivers and children that promotes affection and trust, and predictable adult responsiveness to children's communication are foundations of children's learn The importance of these elements for young children's development is articulated in the Nurturing Care Framework (NCF), developed in follow-up of the 2017 *Lancet* series *Advancing Early Childhood Development: From Science to Scale* The NCF describes the qualities of holistic environments that promote, support and protect young

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.53
Volume 4, Issue 1, August 2024

children's health, nutrition, safety, and early learning, and satisfy the need for warm and affectionate responsiveness from others.

Clearly, the elements for success in school and lifelong learning are developed long before children enter primary schools. Both stimulating home environments and participation in high-quality early childcare and educational programmes independently and interactively support children's early learning. One or more years of quality pre-primary education builds cognitive and social skills founded on the substantial learning that takes place through interactions with familiar adults and other children at home, as well as in child day care.

Poverty and undernutrition mar early development for far too many children, estimated at 250 million, or 43%, of all children under 5 years old in low- and middle-income countries (LMICs). These early disadvantages put children at risk of inadequate learning, incomplete schooling and lower adult earnings. The average percentage losses of adult income resulting from loss of schooling due to stunting or living in extreme poverty in early life are estimated to be about 27% Early disadvantages are compounded by poor quality and high out-of-pocket costs of early childcare and educational and pre-primary programmes. Both poverty and stunting can be mitigated by governmental actions. For example, both minimum wage and parental leave policies have been shown to improve nutrition, family income, and healthy child development.

Unequal opportunities from the start

Inequalities in learning and development are evident early. Analysis of data collected since 2010 through 135 nationally representative datasets (primarily Demographic Health Surveys & Multiple Indicator Cluster Surveys) showed that risks for early childhood development and opportunities for early learning varied widely across regions7. All four indicators analysed showed clear gradations of increasing disadvantage for young children from upper-middle- to lower-middle- to low-income countries. From 16% to 36% to 55% of children under age five were exposed to extreme poverty or stunting; 15% to 38% to 46% of 3- to 4-year-olds were not receiving basic stimulation for learning at home; 13% to 26% to 40% of 3- to 4-year-olds were not developmentally on track (as measured by the Early Childhood Development Index, or ECDI), and from 47% to 63% to 79% of children of the same age were not attending early childcare and educational programmes. Gradations of disadvantage were found also within countries with respect to household wealth and rural versus urban residence, with poor rural households having the greatest disadvantages. The differences between boys and girls on the four indicators were either small or non-significant, with slight advantages for girls on stunting and ECD- Consistent with the schooling data reported by Friedman et al.1, children in sub-Saharan Africa were most likely at risk due to poverty and stunting, had the lowest percentages receiving adequate stimulation at home (47% vs. 69% for the average of 62 countries from different regions), the smallest proportion developmentally on track in terms of the ECDI (61% vs. 75% for the overall average), and the lowest percentages attending some form of early care and educational programmes (24% vs. 39% for the overall average).

At least 95% of children between 4 years of age and entry into compulsory primary school participate in pre-primary programmes in the 28 European Union countries, reaching the target set in their Strategic Framework for Cooperation in Education and Training. Pre-primary programme enrolments globally have increased dramatically from 35% in 2000 to over 62% in 2019, with increases in all regions. In LMICs, enrolments nearly doubled over this period. For example, enrolments increased from 9 to 20% in low-income countries and from 45 to 76% in upper-middle-income countries. However, substantial gaps remain, between and within countries and between urban and rural areas and by socioeconomic status. For example, the 2019 pre-primary programme gross enrolment rate was only 32% in sub-Saharan Africa compared to 62% globally.

Governments vary in their provision of pre-primary programmes. Among 194 countries, 68 countries have legal mandates for either free and/or compulsory pre-primary education. Among these 68 countries, pre-primary education is free and compulsory in 46 countries. Notably, legal provisions for free pre-primary education exist in 3/27 low-income countries, 11/34 lower-middle-income countries, 23/33 upper-middle-income countries, and 24/26 high-income countries. There is thus a gradient between income and legal provision for pre-primary education. On the one hand, countries that legislated either free and/or compulsory education saw their enrolments increase from 41.4% in 1999 to 82.8% in 2018. On the other hand, countries with no legal frameworks for pre-primary education increased from 52.9% in 1999 to 63% in 2018 Countries offering 1 year of tuition-free pre-primary programming had 16% higher gross enrolment rates compared to countries without tuition-free pre-primary provision. Countries providing at least 1 year of

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.53
Volume 4, Issue 1, August 2024

free and compulsory pre-primary programming had 10% higher primary school completion rates suggesting that free compulsory programmes can set children on paths to longer-term educational attainment.

Inequalities in both provision of and access to early learning opportunities accumulate and extend as children progress through pre-primary, primary and secondary schoolingThis lessens children's chances of catching-up and of realizing the global community's efforts to eliminate documented inequalities in schooling1.

Early disadvantage is costly

Learning occurs progressively and skills build on each other. Complementarities between skills increase motivation and make learning at later ages easier. A recent national longitudinal study showed dynamic complementarity between access to pre-primary education and improved primary and secondary education, with access to both particularly beneficial in terms of increased educational attainment and earnings for children from more disadvantaged households Moreover, recent evidence indicates that universally provided high-quality early care and education programmes reduce learning gaps between children from higher and lower socioeconomic status households

Given this, it is unsurprising that longitudinal studies show strong evidence for cognitive, social, and economic returns to high-quality early care and educational programmes For example, expanded pre-primary programme attendance for Argentinian children aged 3–5 increased primary school language and mathematics scores by 0.3 and 0.2 standard deviations (SD), respectively, for both boys and girls. Adults in 12 LMICs who had attended early care and education programmes stayed in school on average 0.9 years longer, controlling for family background and other factors

The new analyses of the value of pre-primary school, using a sample of 430,000 children from 73 middle- and high-income countries (Supplementary Table 1) surveyed in the 2018 *Programme for International Student Assessments* (PISA)33.

Results

Students who participated in 1 year of pre-primary programmes had on average 0.10 SD (95% CI 0.09, 0.11) higher mathematics test scores at age 15 compared to students who participated in <1 year or no pre-primary programmes; students who participated in 2 or more years had on average 0.22 SD (95% CI 0.21, 0.23) higher scores than their non-participating peers, controlling for a range of basic sociodemographic characteristics. Estimated associations were almost identical for science scores, with increments of 0.09 SD (95% CI 0.08, 0.10) for at least 1 year, and 0.20 SD (95% CI 0.19, 0.21) for 2 or more years of pre-primary programme exposure. Figures 1 and 2 show that these associations were slightly larger for lower-middle- ($N = 6$) and high-income ($N = 43$) countries than for upper-middle-income countries ($N = 24$). The largest associations were found in the East Asia and Pacific region ($N = 11$), while associations were weakest in Europe and Central Asia and in North America. Full results are presented in Supplementary Table 2 (mathematics) and Supplementary Table 3 (science). Although these analyses control for potential confounding variables such as household socioeconomic status, it is important to recognize that they are non-causal in nature. Yet, our results are largely robust, including more conservative models with fixed effects that aim to capture either major geographical regions or school types (Supplementary Table 4), and are consistent with causal estimates of the benefits of pre-primary education on cognitive outcomes ($d = 0.20$–0.35)34.

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.53
Volume 4, Issue 1, August 2024

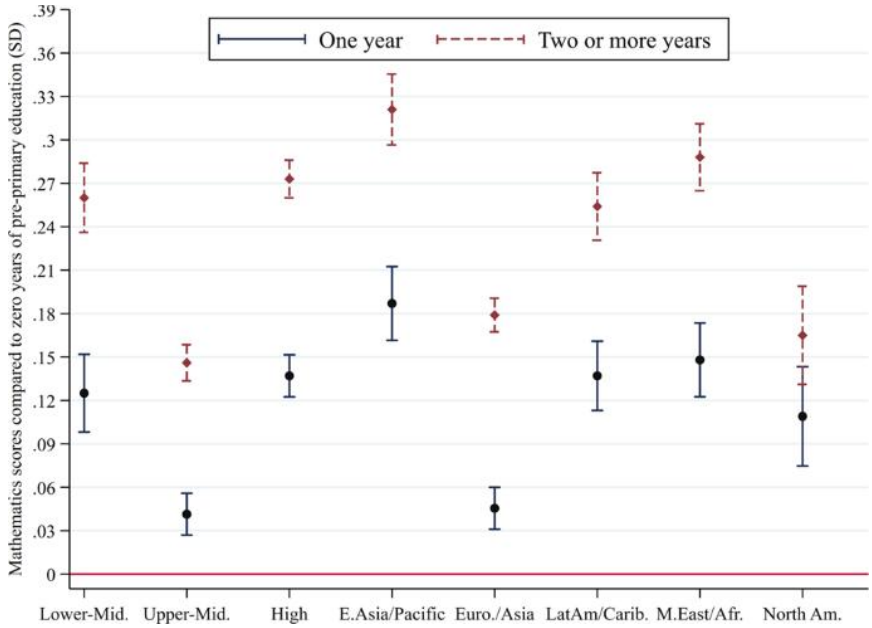

Fig. 1: Estimated average differences in mathematics test scores at age 15 between pre-primary programme participants and non-participants

Notes: Mathematics scores in standard deviations (SD) and confidence intervals for students with 1 year of pre-primary attendance compared to 2 or more years of pre-primary attendance by country income and regional groupings. All empirical models are based on 2018 PISA data and control for child sex and age, age of school entry, fathers' and mothers' schooling attainment and household socioeconomic status. Supplementary Table 2 presents additional details.

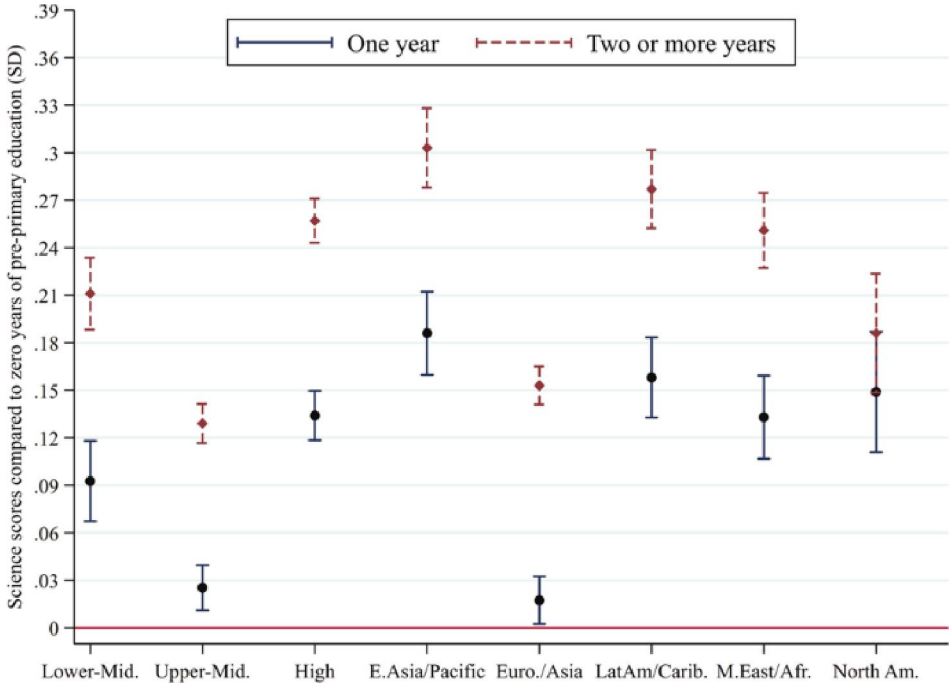

Fig. 2: Estimated average differences in science test scores at age 15 between pre-primary programme participants and non-participants.

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.53
Volume 4, Issue 1, August 2024

Notes: Science scores in standard deviations (SD) and confidence intervals for students with 1 year of pre-primary attendance compared to 2 or more years of pre-primary attendance by country income and regional groupings. All empirical models are based on 2018 PISA data and control for child sex and age, age of school entry, fathers' and mothers' schooling attainment and household socioeconomic status. Supplementary Table 3 presents additional details.

Costs of inaction

One corollary of lifelong benefits of investments in the early years is that inadequate investments incur significant future costs. To illustrate one important component of the costs of not achieving SDG 4.2.2, we simulated the costs of inaction (COI), or the present discounted value of the losses in future income (net of pre-primary school costs) if pre-primary programme enrolments remain at their 2018 levels instead of becoming universal21 (see Supplementary Table 5). We note that preschool education is associated with other short- and long-term impacts that are not included in the model, such as female labour participation or reduced crime in a society. The omission of such benefits in our estimates means that they possibly are conservative, and underestimate the true benefits of early educational programmes. On the other hand, general equilibrium effects may mean that the rates of return to preschool would decline with expansion, which would tend to work in the opposite direction.

The 134 countries with available data together have populations of over 6.3 billion people. Supplementary Table 5 presents the 2018 UNESCO gross pre-primary enrolment rates, the COI due to shortfalls from the SDG 4.2.2 for individual countries, and sensitivity analysis to explore the uncertainty regarding the value of the main parameters in the simulation. Figure 3 gives the median COIs for not reaching SDG 4.2.2 for 1 year for country groups: high (0.58% of GDP), upper-middle (2.54% of GDP), lower-middle (6.24% of GDP) and low-income (9.06% of GDP). The association with income is inverse, with COI tending to be greater in lower-income countries. These are considerable, particularly in lower-income countries where estimated losses often exceed the annual governmental expenditures on all levels of education, which are 4.1% for low-income countries, 4.4% for lower-middle-income counties, 4.3% for upper-middle-income countries and 5% for high-income countries. Figure 4 shows the COI by country. Most countries with the highest COI relative to GDP are in sub-Saharan Africa and Asia.

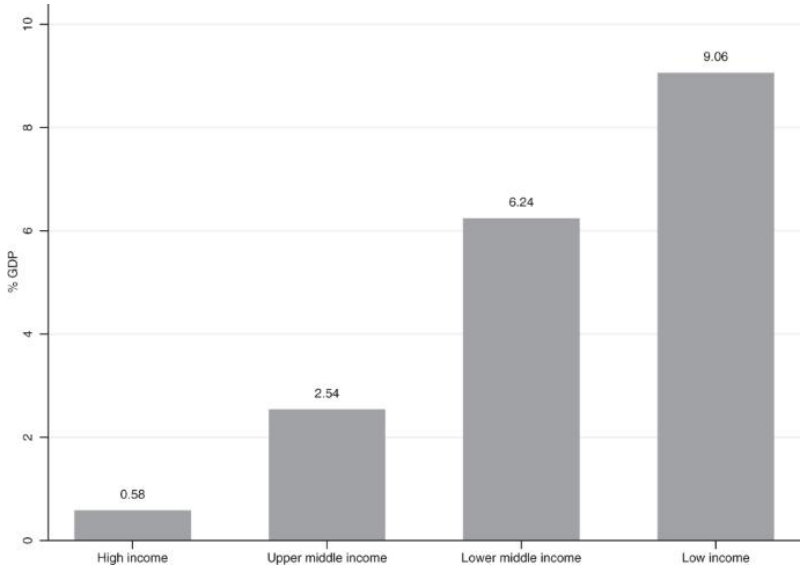

Fig. 3: Median COIs for not reaching SDG 4.2.2 for 1 year.

Median simulated costs of inaction in terms of percentage of GDP loss of not reaching universal coverage for pre-primary programmes by World Bank country income group classification.

The latest methods for Pre-Primary children are as given below

- Play-Based Learning.
- Multi-Sensory Approach.
- Individualized Instruction.
- Storytelling and Rhymes.

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.53
Volume 4, Issue 1, August 2024

- Cooperative Learning.
- Learning through Exploration.
- Visual Aids and Interactive Technology.
- Positive Reinforcement and Encouragement.

REFERENCES

[1]. https://en.wikipedia.org/wiki/Education_in_India
[2]. https://revivingindianeducation.wordpress.com/about/levels-or-stages-of-education-in-india-today/
[3]. https://www.getmyuni.com/articles/primary-education-in-india
[4]. https://www.euroschoolindia.com/blogs/importance-of-primary-education-in-india
[5]. https://www.unicef.org/education/primary-education
[6]. Kumar, K; Priyam, Manisha and Saxena, Sadhana, (2001). "The Trouble with Parateachers,"
[7]. Frontline, 18(22).
[8]. Mehta, Arun C (2008). Elementary Education in India—Progress towards UEE— Analytical Report
[9]. 2006-07, New Delhi: NUEPA.
[10]. Sharma, Rashmi and Ramachandran, Vimala (2008). Elementary Education System in India:
[11]. Exploring Institutional Structures, Processes and Dynamics, New Delhi: Routledge.
[12]. Aradhya, Niranjan and Kashyap, Aruna (2006). The 'Fundamentals': Right to Education in India,
[13]. Bangalore: Books for Change, pp 3-4.
[14]. Mehta, Arun C (2005). Elementary Education in India: Progress towards UEE, Analytical Report, New
[15]. Delhi: National Institute of Educational Planning and Administration.
[16]. Srivastava, Ravi (2005). "Public Expenditure in Elementary Education," In Mehrotra, S; Panchmukhi,
[17]. PR; Srivastava, S and Srivastava, R (Eds.), Universalizing Elementary Education in India, New Delhi: Oxford University Press