Parho Punjab Parhao Punjab Programme for Enhancing Learning Outcomes of Students

Sulakshna Dwivedi*

Abstract

Education is one of the most vital subsystems of any society, forming the foundation for individual growth and national development. Both developed and developing nations require education systems responsive to rapid advancements in science and technology. Despite substantial progress in primary school enrolment worldwide, low learning outcomes remain a persistent challenge. To address this, the state of Punjab, India, implemented the Parho Punjab Parhao Punjab (PPPP) programme—an extensive learning enhancement initiative in government schools from Grades 1 to 12. The programme adopts Teaching at the Right Level (TaRL) strategies to improve foundational literacy and numeracy by tailoring instruction to students' actual learning levels rather than grade expectations. Teachers receive training to implement time-bound, activity-based pedagogies, with student learning assessed through Baseline, Mid-Test, and Post-Test evaluations. Data from government sources reveal consistent improvements in learning outcomes across grades, demonstrating the programme's effectiveness in bridging learning gaps and enhancing overall student achievement. The study highlights how targeted, evidence-based interventions such as PPPP can serve as scalable models for educational improvement and policy replication.

Keywords: Parho Punjab Parhao Punjab (PPPP), Teaching at the Right Level (TaRL), Punjab, Right to Education Act (RTE)

Introduction

Education is widely recognised as a critical determinant of human development and national progress. While enrolment levels have increased substantially in India, this expansion has not translated proportionately into improved learning outcomes—a term referring to the competencies, skills, and abilities, that students are

* *Associate Professor*, School of Business Management and Commerce, Jagat Guru Nanak Dev Punjab State Open University, Patiala, Punjab

expected to acquire at each grade level. Persistent deficits in foundational skills, particularly early-grade reading and numeracy, continue to hinder academic growth and long-term educational attainment.

Evidence from the Annual Status of Education Reports (ASER 2018–2023) consistently highlights these gaps. For example, ASER 2018 revealed that although more than 96 per cent of rural children were enrolled in primary schools, nearly half of Grade 5 students could not read a Grade 2-level text, and only 52 per cent could solve a basic subtraction problem. ASER 2023 further showed that a significant proportion of adolescents still struggled with foundational literacy and numeracy, indicating that early learning gaps persist as students move through higher grades. These findings underscore a critical problem—schooling in India has expanded, but meaningful learning has not kept pace.

A major factor contributing to this gap is the mismatch between grade-level curricula and students' actual learning levels. Traditional classroom practices often assume uniform progression, overlooking the substantial variation in student readiness. Large class sizes, limited time for remediation, and pressure to complete syllabi further constrain teachers' ability to address learning deficits. Consequently, many children advance through grades without mastering essential foundational competencies, widening learning inequalities over time.

To address this challenge, research increasingly supports the use of differentiated and level-based pedagogies. One such evidence-backed model is Teaching at the Right Level (TaRL), developed by Pratham. TaRL involves assessing students' current proficiency, grouping them according to learning levels, and providing targeted instruction in basic reading and arithmetic. Empirical studies across India and other countries have demonstrated TaRL's effectiveness in rapidly improving foundational learning for students who are academically behind (Banerjee *et al.*, 2016).

Recognising the urgency of strengthening foundational learning, the Government of Punjab introduced the Parho Punjab Parhao Punjab (PPPP) programme—a comprehensive, state-wide learning enhancement initiative spanning Grades 1 to 12 in government schools. PPPP is explicitly grounded in TaRL principles and focuses on bridging learning gaps through diagnostic assessments (baseline, mid-term, and post-test), activity-based pedagogy, level-wise grouping, and teacher capacity building. The programme's central aim is to ensure that every child achieves age- and class-appropriate learning outcomes in literacy, numeracy, and subject-specific competencies.

The need for a structured intervention like PPPP is especially pressing in Punjab, where ASER and state-level assessments reveal substantial intra-grade variation in student achievement. By integrating TaRL strategies with systematic monitoring, targeted teaching, and resource support, PPPP seeks to provide an equitable learning opportunities and strengthen the academic foundation essential for higher-level learning.

This study examines the structure, implementation, and outcomes of the PPPP programme, addressing the identified problem gap in foundational learning. It also explores how PPPP, as a state-led, data-driven intervention, contributes to broader educational goals outlined in the Right to Education Act (2009) and the NIPUN Bharat Mission (2021), both of which emphasise foundational literacy and numeracy as prerequisites for quality and equitable education.

Literature Review

Learning outcomes have emerged as a central concern in educational research, particularly in contexts, where enrolment gains have not translated into proportional improvements in academic achievement. Empirical studies repeatedly show that a significant proportion of students advance through school without attaining foundational competencies in literacy and numeracy—skills essential for higher-order learning and long-term educational success. This disconnect between schooling and learning has motivated governments and educational agencies to adopt targeted, evidence-based interventions aimed at improving basic competencies.

One of the most widely validated models addressing foundational learning gaps is the Teaching at the Right Level (TaRL) approach, developed by Pratham. Extensive experimental studies by Banerjee *et al.* (2016) demonstrate that TaRL yields substantial improvements in reading and arithmetic when teaching is aligned with children's actual learning levels rather than age or grade expectations. Subsequent adaptations of TaRL in Kenya, Ghana, and Zambia further reaffirm its effectiveness in supporting struggling learners through level-based grouping, focused practice, and continuous assessment (Pratham, 2019; RTI International, 2021). These findings establish TaRL as a scalable and cost-effective pedagogical strategy with strong empirical backing.

In India, similar learning enhancement programmes such as Read India, Mission Buniyaad, and NIPUN Bharat have adopted principles of competency-based learning, formative assessments, and data-driven instruction. These initiatives highlight the growing national emphasis on foundational learning as the bedrock of educational quality.

Their documented successes—especially in early-grade reading and numeracy—provide an important policy context for state-level programmes like Parho Punjab Parhao Punjab (PPPP), which build upon comparable pedagogical principles.

Despite positive outcomes, several implementation challenges have been identified. Achuonye (2012) and Gajjar (2012) noted that teacher preparedness, awareness, and ongoing support critically determine the programme success. Without adequate training and monitoring, even well-designed interventions may fail to produce the expected results. This insight is particularly relevant for programmes, such as PPPP, which rely heavily on teacher capacity-building, classroom-based assessments, and structured monitoring systems.

At the national level, learning assessments such as the Annual Status of Education Reports (ASER 2018–2023) consistently revealed persistent gaps in reading fluency and numerical operations across grades. ASER findings in Punjab similarly indicated disparities that necessitate context-specific, sustained interventions. These data underscored the urgency of state-led programmes that combine diagnostic assessment, differentiated instruction, and continuous monitoring—all central components of the PPPP framework.

While the PPPP initiative is aligned with proven learning enhancement models like TaRL, limited research exists on its long-term effectiveness, scalability, and integration with the existing curriculum in Punjab. Previous studies on targeted learning interventions (Banerjee *et al.*, 2010; Angrist *et al.*, 2020) suggest that sustained improvements depend on institutional coherence, teacher training quality, and robust feedback loops—areas requiring further empirical documentation in the context of PPPP.

Thus, the existing literature highlights a clear need for region-specific evaluation of PPPP to understand its contribution to improving learning outcomes, its operational strengths, and the challenges that may affect long-term sustainability.

The Theoretical Underpinning the Parho Punjab Parhao Punjab (PPPP) Scheme

The theoretical foundation of the Parho Punjab Parhao Punjab (PPPP) scheme is grounded in Lev Vygotsky's (1978) Zone of Proximal Development (ZPD) and the Teaching at the Right Level (TaRL) pedagogical framework. Together, these perspectives offer a coherent theoretical explanation for the programme's design, emphasising adaptive learning, scaffolding, and assessment-based instruction to enhance students' learning outcomes.

Zone of Proximal Development (ZPD)

Vygotsky's theory of the Zone of Proximal Development defines the distance between what a learner can achieve independently and what they can accomplish with appropriate guidance and support from a teacher or more capable peer. This concept underscores the significance of scaffolding—structured assistance that allows learners to progressively acquire higher levels of understanding.

The PPPP programme operationalises the principles of ZPD by identifying each student's current learning level through diagnostic assessments and then providing instruction calibrated to that level. Teachers use continuous assessment (baseline, mid-test, and post-test) to determine the "proximal zone" of each learner, offering targeted support that helps them transition from basic to advanced levels of comprehension. Activity-based learning modules, peer collaboration, and teacher mentoring provide the necessary scaffolding that enables learners to progress at an individualised pace. In this way, PPPP embodies Vygotsky's central idea that effective learning occurs when instruction is slightly ahead of the learner's independent capacity but within their potential developmental range.

Teaching at the Right Level (TaRL) Framework

The Teaching at the Right Level (TaRL) approach, developed by the Indian non-profit organisation Pratham, focuses on tailoring instruction to students' actual learning levels rather than their chronological age or grade. This data-driven framework begins with a simple assessment of foundational reading and arithmetic skills, followed by grouping students according to their learning proficiency and delivering targeted instruction. The TaRL model emphasises formative assessment, adaptive pedagogy, and mastery-based progression—principles that directly align with the structure of PPPP.

The PPPP scheme integrates the TaRL methodology by:

- Conducting phased assessments (baseline, mid-term, and post-test) to map student progress;
- Grouping learners according to their proficiency levels rather than grade classification (the Mehal System);
- Training teachers in interactive, activity-based, and child-centred instructional strategies;
- Using colourful supplementary materials and learning aids to foster engagement and conceptual understanding; and
- Employing continuous monitoring and feedback mechanisms to refine instructional delivery.

Through these strategies, PPPP ensures that instruction remains relevant to learners' cognitive readiness, thereby improving retention and comprehension while minimising grade-level learning gaps.

Convergence of ZPD and TaRL in PPPP

The PPPP framework effectively synthesises the principles of ZPD and TaRL. While ZPD provides the psychological and developmental rationale for individualised instruction, TaRL offers the operational and methodological blueprint for implementing it in classroom settings. Both emphasise learning readiness, diagnostic assessment, and adaptive support—core tenets embedded in PPPP's design.

Moreover, both frameworks share a focus on evidence-based, data-driven decision-making, where continuous feedback guides instructional improvement. By integrating these principles, PPPP promotes a learner-centred environment that bridges theoretical insight with practical educational reform.

Research Gap

Although numerous national and international initiatives have aimed to improve foundational literacy and numeracy, research continues to reveal a persistent "learning outcome gap" between enrolment and actual academic achievement. Evaluations of the Teaching at the Right Level (TaRL) model in India, Kenya, and Ghana (Banerjee *et al.*, 2016; Pratham, 2019; RTI International, 2021) have established the effectiveness of tailored instruction for improving reading and mathematics skills. However, empirical studies examining the long-term, system-wide impact of such interventions within government-led education programmes remain limited.

In the Indian context, while initiatives such as Read India, Mission Buniyaad, and NIPUN Bharat have demonstrated short-term gains, few have been rigorously evaluated for scalability, sustainability, and integration with formal curricula (Angrist *et al.*, 2020). This gap is particularly pronounced at the state level, where implementation often varies due to differences in socio-economic and institutional contexts (Filmer *et al.*, 2020).

Specifically, for the state-led Parho Punjab Parhao Punjab (PPPP) programme—Punjab's comprehensive learning enhancement model—there is a scarcity of systematic research that:

- Evaluates longitudinal learning outcomes across grade levels;
- Examines scalability and sustainability beyond pilot or short-term phases;
- Assesses integration between activity-based pedagogies and existing curricular frameworks; and
- Analyses teacher training effectiveness in implementing differentiated instruction.

These gaps indicate a need for deeper inquiry into how PPPP translates pedagogical theories such as Teaching at the Right Level and Zone of Proximal Development into measurable, context specific learning improvements.

Addressing these unexplored dimensions contributes to the global discourse on evidence-based educational reform and localised policy innovation.

Need for the Study

Education is central to social progress and human capital development. However, increased access to schooling does not automatically guarantee meaningful learning outcomes. The ASER (2023: Beyond Basics) findings underscore that a substantial proportion of students in India—despite near-universal primary enrolment—fail to achieve foundational competencies in literacy and numeracy. This calls for adaptive learning systems capable of meeting the diverse learning needs of students.

In this context, the Parho Punjab Parhao Punjab (PPPP) programme, introduced by the Government of Punjab, represents a structured state-level response to persistent learning challenges. Designed to enhance conceptual understanding and foundational competencies across Grades 1 to 12, PPPP incorporates diagnostic assessment, differentiated instruction, teacher training, and technology-supported monitoring.

The need for the present study arises from three pressing educational imperatives:

- **Persistent Low Attainment Levels:** Despite enrolment gains, learning outcome disparities remain substantial, particularly at the primary level.
- **Adaptability of Educational Interventions:** Continuous changes in technology and pedagogy necessitate the evaluation of adaptive, evidence-based approaches like PPPP.
- **Data-driven Policy Learning:** Systematic evaluation of PPPP can generate actionable insights for replication and scaling across other Indian states and comparable international contexts.

This research, therefore, seeks to critically examine how PPPP addresses these needs through its design, strategies, and impact on learning outcomes.

Relevance of the Study

The significance of this study extends beyond the state of Punjab, contributing to both academic research and educational policy development.

- **Empirical Contribution:** The study provides evidence on the effectiveness of a large-scale, government-led learning enhancement programme based on Teaching at the Right Level. This adds to the existing literature, which is dominated by NGO-led or small-scale studies.
- **Policy Implications:** Findings can inform national frameworks such as Samagra Shiksha and NIPUN Bharat, offering practical insights on integrating formative assessment, teacher capacity building, and adaptive learning into public education systems.

- **Pedagogical Relevance:** By focusing on individual learning trajectories through baseline, mid-test, and post-test assessments, the study underscores the role of continuous assessment and feedback in improving learning outcomes.
- **Global Relevance:** Given UNESCO's (2021) global call to reduce 'learning poverty', the model offers valuable lessons for other developing nations seeking scalable and sustainable strategies to strengthen foundational learning.
- **Framework for Future Evaluation:** The research establishes a replicable framework for evaluating similar programmes in varied educational contexts, thereby contributing to evidence-based decision-making in education policy.

Objectives of the Study

- To study the PPPP scheme in terms of aims, structure, layout, strategies, and initiatives in the state of Punjab.
- To study the impact of PPPP on improving the learning outcomes of students in Punjab.

Data Sources

The study is based entirely on secondary data sources, systematically collected, and synthesised to evaluate the implementation and outcomes of the Parho Punjab Parhao Punjab (PPPP) programme. The selection of diverse data repositories was driven by the objective to ensure comprehensive coverage of programmatic performance indicators, longitudinal trends, and contextual variables affecting educational quality in Punjab.

The key Data Sources include:

- **Official Government Publications:** Documents and reports from the Department of School Education, Government of Punjab, and Samagra Shiksha provided core information on the objectives, structure, and implementation mechanisms of the PPPP programme.
- **Punjab Economic Surveys (2019–24):** Annual statistical compendia that include district-level educational indicators, performance trends, and sectoral allocations relevant to quality education initiatives.
- **State Council of Educational Research and Training (SCERT) Reports:** Detailed annual and periodic reports documenting baseline, mid-test, and post-test results, serving as primary evidence for assessing PPPP's impact on student learning outcomes.
- **Punjab School Education Board (PSEB) Examination Data:** Data about Grades 8, 10, and 12 board results across multiple years were used to evaluate improvements in academic performance post-implementation of PPPP.
- **Annual Status of Education Reports (ASER) (2018–23):** Independent surveys providing nationwide and state-level

benchmarks on the foundational learning indicators, used for external validation of PPPP's effectiveness.

- **Scholarly and Policy Research:** Publications by the World Bank, UNESCO, and Pratham Education Foundation supplied comparative frameworks and conceptual insights linking PPPP to global trends in foundational learning reforms.

A multi-source approach was deliberately adopted to ensure triangulation and validation of findings. The rationale for using multiple data sources lies in enhancing both the credibility and depth of analysis. Each dataset offers distinct advantages—while SCERT and PSEB data provide direct insights into Punjab's student performance metrics, national surveys and international reports enable comparative contextualisation. This integration reduces potential biases arising from single-source dependence and ensures that the study captures both micro-level (state and district) and macro-level (national and global) educational trends.

Rationale for Multi-source Data Integration

Given the scope of the PPPP programme, which spans multiple grade levels, subjects, and academic years, reliance on a single dataset would have been insufficient to capture the full complexity of its outcomes. Therefore, a data triangulation strategy was adopted to cross-verify patterns and establish consistency across different indicators.

- **Quantitative Data Triangulation:** Baseline, mid-test, and post-test data were compared with board examination results from PSEB and state-level assessments documented in the Punjab Economic Surveys to trace longitudinal performance improvements.
- **Temporal Triangulation:** Data covering the years 2018–24 were analysed to identify persistent trends, ensuring that results reflect sustained rather than episodic changes in student learning outcomes.
- **Conceptual Triangulation:** Data interpretation was guided by the Teaching at the Right Level (TaRL) framework and Zone of Proximal Development (ZPD) theory, ensuring that the empirical findings were consistently related to the established educational concepts.

By combining diverse datasets, the study enhances the validity of conclusions regarding the effectiveness of PPPP. The process also allows for cross-comparison between state-generated data and independent external evaluations, such as those by ASER, thereby adding robustness to the analytical framework.

Methodology

The study adopts a descriptive and analytical research design to examine the structure,

implementation, and outcomes of the Parho Punjab Parhao Punjab (PPPP) programme. The approach is qualitative in interpretation but quantitative in data representation, employing statistical comparisons and graphical analysis to demonstrate trends in learning outcomes.

Research Design

The design follows a sequential analytical framework comprising three stages:

- **Programme Description:** Detailed documentation of PPPP's objectives, strategies, and structural components (testing system, teacher training, and monitoring mechanisms) based on government reports.
- **Data Compilation and Organisation:** Collection and tabulation of the secondary data from SCERT, PSEB, and Punjab Economic Surveys to identify performance indicators of various grade levels.
- **Analytical Evaluation:** Comparative analysis of baseline, mid-test, and post-test data to determine improvements in learning outcomes, supported by graphical representations and percentage comparisons over time.

This structure facilitates both a descriptive account of PPPP's evolution and an empirical evaluation of its educational impact.

Analytical Framework

The study uses longitudinal comparative analysis to examine progress across multiple time points. For primary classes (Grades 1–5), the baseline, mid-test and post-test model measures short-term learning gains. For higher classes (Grades 8, 10, and 12), year-on-year performance trends derived from board examination data provide evidence of sustained improvement.

To ensure alignment with available data, the methodology explicitly acknowledges that baseline, mid-term, and post-test comparisons apply to primary-level classes (Grades 1–5). For upper primary and secondary levels, where such phased data were unavailable, trends are inferred through comparative year-wise board results as recorded by PSEB and summarised in the Punjab Economic Surveys (2020–24). This clarification ensures methodological consistency between research claims and data presentation.

Data Analysis Techniques

- **Descriptive Statistics:** Used to summarise percentages of students achieving various grade categories (A+, A, B+) across subjects and years.
- **Trend Analysis:** Graphical and tabular comparisons illustrate longitudinal improvement in academic performance post-PPPP implementation.
- **Comparative Assessment:** Pre- and post-intervention results are compared to determine the degree of improvement in foundational and subject-specific competencies.

- **Correlation with Programmatic Factors:** Analysis links observed performance improvements with key PPPP strategies—teacher training, assessment frequency, and use of supplemental learning materials.

The integration of these analytical tools allows for a nuanced understanding of PPPP's outcomes across different levels of schooling, ensuring that findings are not merely descriptive but also interpretive.

Validity and Reliability Considerations

To safeguard the reliability of secondary data, cross-verification was performed between state and national data sources. For instance, learning levels reported in *SCERT* evaluations were compared with those from ASER and Punjab Economic Surveys to ensure data consistency. Any discrepancies were contextualised in light of sampling differences and data collection methodologies. Moreover, all data sources were drawn from officially verified publications to uphold academic integrity and authenticity.

Methodological Justification

The chosen methodology is consistent with the objectives of the study, which are:

- To analyse the PPPP scheme in terms of its structure, strategies, and implementation; and
- To assess the impact of PPPP on improving student learning outcomes in Punjab.

By employing a descriptive-analytical approach supported by multi-source triangulation, the methodology ensures that the study captures both the operational dimensions and the outcome effectiveness of the PPPP programme. It balances quantitative rigour with qualitative interpretation, allowing for a holistic understanding of how state-level educational interventions can yield measurable learning improvements over time.

Schemes and Initiatives Relevant to Quality Education and PPPP

Efforts to strengthen learning outcomes in India have increasingly emphasised foundational literacy and numeracy as the basis for long-term educational success. Within this national landscape, several state-level initiatives in Punjab laid the groundwork for the development of the PPPP programme. These initiatives progressively shifted the focus from traditional grade-based teaching towards competency-based, level-appropriate instruction aligned with the principles of Teaching at the Right Level (TaRL).

Early Learning Enhancement Efforts in Punjab

Punjab's initial interventions—implemented before PPPP—were aimed at improving basic reading, writing, and numeracy by systematically identifying students'

learning levels and tailoring instruction accordingly. These initiatives evolved, each adding a layer of instructional reform relevant to PPPP's design:

Learning Enhancement Programme (LEP, 2007)

Introduced to improve foundational competencies, LEP emphasised assessing children's existing knowledge and providing targeted support, rather than relying solely on grade-based expectations.

Minimum Levels of Learning (MLL, 2008–12)

This phase aligned student learning goals with level-wise competencies. Assessments were used to bridge the gap between actual learning levels and class-appropriate expectations, moving toward outcome-based teaching.

PERVESH (2013 onwards)

PERVESH placed stronger emphasis on classroom processes and formative assessments. It introduced level-based teaching aligned with RTE and CCE guidelines, employing baseline, mid-term, and post-tests to monitor student progress. Students were advanced to higher learning levels only after demonstrating mastery, reflecting principles that closely mirror the TaRL framework.

These programmes collectively highlighted the need for a structured, evidence-driven model to address persistent learning gaps, providing the conceptual foundation for the PPPP programme.

Parho Punjab Parhao Punjab (PPPP): Punjab's State-wide Learning Enhancement Programme

Building on earlier state initiatives and emerging national evidence on TaRL, the Government of Punjab launched Parho Punjab Parhao Punjab (PPPP) as a comprehensive reform aimed at ensuring all children attain age- and grade-appropriate learning outcomes.

Key Features of PPPP

TaRL-aligned instruction

Students are grouped according to learning levels based on diagnostic assessments, allowing teachers to deliver targeted, foundational instruction in literacy and numeracy.

Continuous assessment

Baseline, mid-term, and post-test evaluations track progress and provide feedback for instructional planning.

Teacher capacity building

Teachers receive structured training in activity-based learning, time-bound instructional strategies, and level-wise teaching methods.

Activity-based and conceptual learning

Classroom practices emphasise hands-on learning, discovery, and conceptual understanding rather than rote memorisation.

Use of technology

During the COVID-19 pandemic, tools such as the Punjab Educare App

and televised or e-content lessons supported continuity of learning across subjects.

Parental involvement and monitoring

Regular parent–teacher meetings and systematic monitoring mechanisms ensure accountability and support student progress.

Impact and Alignment with Foundational Learning Goals

The PPPP programme has demonstrated measurable improvements in learning outcomes levels, as reflected in ASER reports and state examination performance. Its alignment with competency-based, level-specific instruction positions it within a broader national movement toward strengthening foundational skills, consistent with the goals of the NIPUN Bharat Mission (2021).

Objective 1: To Study the Parho Punjab Parhao Punjab (PPPP) Scheme in Terms of Its Aims, Structure, Layout, Strategies, and Initiatives in the State of Punjab

PPPP seeks to ensure that every child attains grade-appropriate competencies in foundational literacy, numeracy, and subject learning. Over the years, PPPP has evolved into a comprehensive, multi-dimensional intervention integrating assessment-led pedagogy, teacher capacity building, digital learning systems, and continuous monitoring.

Aims of the PPPP Programme

The PPPP programme aims to strengthen learning outcomes across all educational stages through targeted instructional practices.

Pre-primary level

At the pre-primary stage, PPPP focuses on holistic child development through play-based and experiential learning. The objectives include school readiness, enhancement of social–emotional skills, linguistic development, and the strengthening of physical and cognitive abilities.

Primary level (grades 1–5)

For the primary stage, the scheme prioritises foundational literacy and numeracy. PPPP aims to ensure that children can read simple texts in Punjabi and English, communicate effectively, develop number sense, perform basic arithmetic operations, and engage in activity-based learning environments.

Upper primary and secondary level (grades 6–10)

At this stage, the programme emphasises competency development in mathematics, science, social science, and languages. It promotes hands-on learning through model-building, demonstrations, experiments, and the application of theoretical concepts to real-life situations.

Senior secondary level (grades 11–12)

For senior secondary learners, PPPP aims to deepen subject understanding

and build analytical, skill-based, and application-oriented competencies to prepare students for higher education and career pathways.

Structural Framework and Layout of PPPP

The organisational design of PPPP is anchored in three core components: assessment, learning-level grouping, and monitoring.

Assessment framework

The programme employs a structured assessment cycle comprising baseline, mid-year, and post-tests. These assessments help to diagnose learner proficiency and monitor progress against annual learning benchmarks.

Learning-level grouping (Mehal system)

A central feature of PPPP is the Mehal system, wherein students are grouped based on actual learning levels rather than grade placement. This facilitates level-appropriate instruction consistent with TaRL methodologies and enables teachers to target specific competencies.

Monitoring and follow-up mechanisms

The programme incorporates a multi-tier monitoring system spanning school, cluster, block, district, and state levels. Monitoring teams conduct regular school visits to observe instructional practices, the use of supplementary materials, fidelity to Mehal-based instruction, and student progress through random testing. This ensures accountability and timely remediation.

Key Strategies Adopted Under PPPP

Content development

PPPP develops curriculum-aligned supplementary learning materials such as reading cards, flash cards, story charts, activity sheets, and teacher manuals. These materials, designed by the State Resource Group, support remedial teaching, and reinforce foundational competencies.

Teacher training and professional development

Teacher capacity building is implemented through a cascading training model. State Resource Groups train Block Master Trainers and Cluster Trainers, who subsequently train teachers at the district and block levels. The training focuses on activity-based pedagogy, conceptual teaching, child psychology, inclusive education, and learning-level-based instruction.

Student evaluation and academic diagnosis

The assessment system enables teachers to identify students' readiness levels, diagnose learning gaps, and plan remediation. Subject-specific annual targets guide instructional priorities and provide measurable academic goals.

Digital innovations and ICT integration

The integration of ICT is a notable strength of PPPP.

- Punjab Educare App offers e-content, videos, practice materials, and assignments across major subjects.

- 'Parhao Punjab' Game and Parho Punjab App support reading enhancement through interactive learning.
- Televised lessons on DD Punjabi and e-Vidya ensured learning continuity during COVID-19 school closures.

Major Initiatives and Innovations Under PPPP

Reading corners

Reading Corners, established in all primary schools, provide level-specific books and promote early reading habits.

Morning assemblies and Bal Sabha

Daily morning assemblies and weekly Bal Sabha sessions integrate moral education, language activities, cultural exposure, and physical fitness into the school routine.

Mathematics Corners

Mathematics Corners, equipped with hands-on resources, facilitate conceptual understanding and playful engagement with numbers.

Parent–teacher engagement

Regular parent–teacher meetings (PTMs) strengthen home–school linkages and enhance parental participation in children's learning.

Monthly agendas and activity planning

The state issues detailed monthly agendas, including day-wise activity plans and celebration guidelines, ensuring uniform implementation across schools.

Evidence of Programme Effectiveness

Baseline–post-test learning gains

Data from PPPP implementation show considerable improvements in foundational competencies, with some cohorts demonstrating increases from 62 per cent to 88 per cent between baseline and post-test assessments (2018–19).

ASER findings

ASER reports (2010, 2018–21) indicate notable improvements in reading and arithmetic levels in Punjab, during periods of PPPP implementation, underscoring its positive impact.

Longitudinal improvements

Early interventions under PPPP (2017–19) have yielded sustained improvements in later grades, indicating the long-term benefits of foundational learning reforms.

Focus on equity

The programme places particular emphasis on learners with low proficiency, offering structured remediation and support to bridge learning gaps.

Objective 2: To Study the Impact of PPPP in Improving Learning Outcomes of Students in Punjab

Impact of PPPP in Improving Learning Outcomes of Students

The results are structured to show

- foundational learning improvements at the primary level

through baseline–mid-test–post test assessments,

- academic performance trends at the upper primary and secondary levels using board examination data, and
- a synthesised interpretation linking programmatic interventions to these observed outcomes.

Foundational learning outcomes: Primary level (Grades 1–5)

The PPPP programme began with a strong focus on early grades, aligning with the Teaching at the Right Level (TaRL) philosophy of strengthening foundational literacy and numeracy. Data from the State Council of Educational Research and Training (SCERT, Punjab) were used to compare baseline (September 2019) and end-line (March 2020) test results as depicted in Fig. 1.

- In the baseline assessment, only 45.51 per cent of students achieved their class-specific targets across core subjects (Punjabi, mathematics, and English).
- By the end-line assessment, this figure had risen sharply to 88.44 per cent, indicating a substantial improvement of over 43 percentage points within a single academic year.

This dramatic increase underscores the effectiveness of PPPP's activity-based pedagogy and teacher mentoring approach, which emphasised differentiated instruction and real-time feedback. Students who previously struggled with basic reading and arithmetic demonstrated measurable progress in comprehension, problem-solving, and application-based learning.

The improvement also reflects the success of the Mehal System, a grouping strategy that allowed teachers to organise students by learning proficiency rather than grade level, thereby optimising instructional time and focus. The consistent upward trajectory in foundational learning levels indicates that PPPP successfully bridged early learning gaps—an achievement that forms the basis for sustained academic success in higher classes.

The PPPP has been extended to 9th and 10th Grades and thereafter to 11th and 12th Grades. The impact of the 'Parho Punjab Parhao Punjab' project was positive, as was evident from the Punjab School Education Board Results for the session 2018–19 vis-à-vis the preceding year 2017–18.

Upper primary outcomes (Grade 8): Subject-wise analysis

To assess the impact of PPPP at the upper primary level, Grade 8 results from the Punjab School Education Board (PSEB) were analysed for two academic years—2019–20 and 2020–21—representing the period immediately following PPPP's large-scale implementation as depicted in Tables 1 and 2.

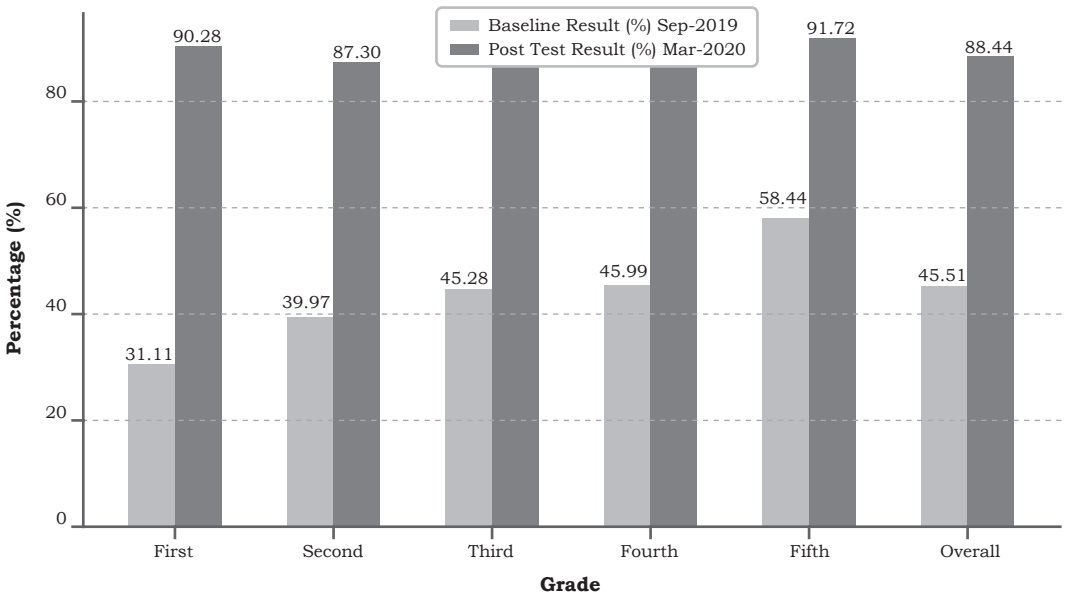

Fig. 1: Grade-wise percentages of achieved targets (2019–20)

Source: SCERT, Punjab

Across all core subjects (Punjabi, Hindi, Urdu, English, mathematics, science, and social science), the proportion of students securing A+ (91–100%) and A (81–90%) grades increased significantly between the two years:

- In 2019–20, the average percentage of students in the A+ and A categories across all subjects was approximately 39 per cent.
- In 2020–21, this increased to nearly 52 per cent, representing a 33 per cent relative improvement in high-achievement levels.

Particularly notable improvements were observed in English and Mathematics, where the share of A+ grades rose from around 42 per cent to nearly 48 per cent, suggesting strengthened conceptual understanding in subjects traditionally viewed as challenging. These results align with PPPP's pedagogical focus on skill mastery, continuous practice, and reinforcement through visual, experiential, and interactive learning tools.

The Punjab Economic Survey (2021–22) corroborates these findings, noting consistent performance improvement across districts, with most falling in the 99th percentile range for Grade 8 pass rates as revealed in Figs. 2 and 3. This uniformity reflects effective state-level monitoring and standardised implementation of PPPP's learning enhancement strategies.

Table 1

Grade 8 Subject- and Grade-wise Result of 2019–20 in Percentage

Subject	A+(%) 91–100	A(%) 81–90	B+(%) 71–80	B(%) 61–70	C+(%) 51–60	C(%) 41–50	D(%) 1–40
Punjabi–L1	49.36	29.20	15.59	4.18	1.06	0.42	0.18
Punjabi–L2	27.11	29.24	25.97	11.93	3.80	1.21	0.30
Hindi–L1	27.22	29.55	25.67	12.02	3.67	1.14	0.32
Hindi–L2	47.49	29.38	16.29	4.81	1.29	0.51	0.21
Urdu–L1	50.00	50.00	0.00	0.00	0.00	0.00	0.00
Urdu–L2	24.74	31.93	27.14	10.94	4.35	0.60	0.15
English	42.26	29.19	18.78	6.68	2.00	0.75	0.27
Maths	39.78	30.31	19.02	7.40	2.25	0.82	0.33
Science	41.33	29.43	19.02	7.12	2.04	0.71	0.28
Social Science	42.55	29.91	18.24	6.42	1.85	0.67	0.27

Source: pseb.ac.in

Table 2

Grade 8 Subject and Grade-wise Result 2020-21 in Percentage

Subject	A+(%) 91–100	A(%) 81–90	B+(%) 71–80	B(%) 61–70	C+(%) 51–70	C(%) 41–50	D(%) 33–40
Punjabi–L1	55.61	27.91	12.66	2.96	0.60	0.17	0.04
Punjabi–L2	27.90	30.39	26.50	11.39	3.00	0.63	0.16
Hindi–L1	46.66	36.33	12.06	2.74	0.87	0.79	0.51
Hindi–L2	67.37	23.83	4.66	0.84	0.32	2.07	0.80
Urdu–L1	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Urdu–L2	45.97	47.87	4.58	0.32	0.00	0.79	0.47
English	48.47	28.64	16.24	5.05	1.17	0.31	0.07
Mathematics	46.88	29.33	16.55	5.36	1.38	0.39	0.07
Science	48.42	29.01	15.95	4.96	1.22	0.33	0.07
Social Science	49.21	28.95	15.59	4.70	1.14	0.30	0.06
Computer Science	53.11	28.18	13.61	3.87	0.87	0.26	0.05
Health and Physical Education	56.49	27.01	12.28	3.20	0.74	0.20	0.05

Source: Punjab Economic Survey (2021–22)

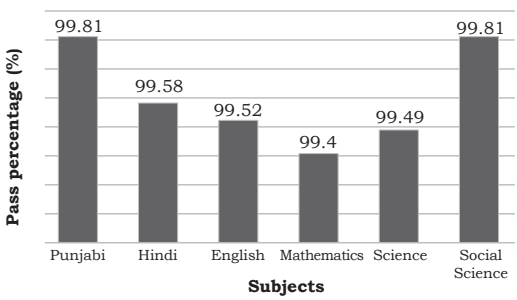

Fig. 2: Subject-wise result of Grade 8 (2021–2022)

Source: Punjab Economic Survey (2022–23)

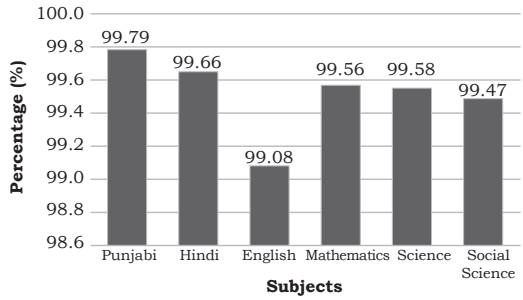

Fig. 3: Subject-wise result of Grade 8 (2022–23)

Source: Punjab Economic Survey (2023–24)

Secondary-level Outcomes (Grade 10): Trends and Analysis

For secondary-level analysis, the study compared Grade 10 board results for 2019–20 and 2020–21 as shown in Tables 3 and 4. The data show a clear upward trend in academic achievement following the implementation of PPPP's teaching and assessment reforms.

- In 2019–20, approximately 46 per cent of students achieved A+ or A grades across subjects.
- In 2020–21, this share increased to over 64 per cent, reflecting a significant 18-percentage-point increase in top-grade attainment.

Subject-wise analysis indicates the most notable improvements in Science and Mathematics, where the proportion of students scoring above 80 per cent grew by 25–27 per cent, as depicted in Figs 4 and 5. This progress coincides with PPPP's introduction of supplementary digital materials, such as the Parho Punjab App, and teacher capacity-building programmes, which emphasised conceptual learning and application-based pedagogy.

Another key factor influencing these outcomes was the integration of ICT-based learning during the COVID-19 pandemic. The Punjab Education Department developed

Table 3
Grade 10 Subject- and Grade-wise Result of 2019–20 (in Percentage)

Subject	A+ (%) 91–100	A (%) 81–90	B+ (%) 71–80	B (%) 61–70	C+ (%) 51–60	C (%) 41–50	D (%) 1–40
Punjabi	57.75	20.57	17.16	2.91	1.41	0.14	0.07
English	46.05	28.41	17.10	5.96	1.73	0.55	0.19
Hindi	45.76	29.77	16.97	5.48	1.42	0.46	0.14
Maths	40.62	30.80	18.67	6.92	2.04	0.69	0.25
Science	41.21	30.09	18.90	6.98	1.95	0.66	0.21
Social Studies	44.45	29.91	17.42	5.82	1.67	0.55	0.18

Source: pseb.ac.in

Table 4
Grade 10 Subject- and Grade-wise Result 2020–21 (in Percentage)

Subject	A+(%) 91–100	A(%) 81–90	B+(%) 71–80	B(%) 61–70	C+(%) 51–60	C(%) 41–50	D(%) 33–40
Punjabi	59.35	26.50	10.46	2.88	0.64	0.14	0.02
English	68.07	25.23	4.94	1.09	0.39	0.20	0.07
Hindi	71.25	22.97	4.37	0.92	0.27	0.17	0.05
Mathematics	67.21	25.37	5.35	1.33	0.43	0.21	0.07
Science	68.45	24.44	5.13	1.32	0.40	0.19	0.06
Social Studies	69.65	23.98	4.75	1.04	0.35	0.17	0.05
Computer Science	58.44	23.38	10.39	1.30	6.49	0.00	0.00
Health and Physical Education	70.56	0.00	26.05	0.00	3.32	0.00	0.07

Source: pseb.ac.in

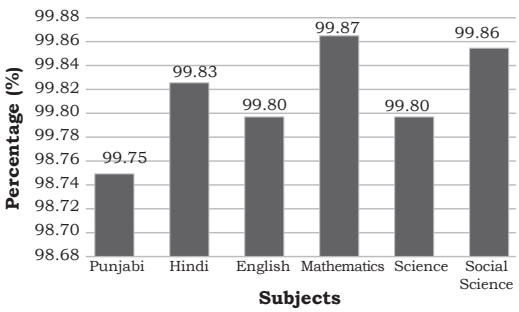

Fig. 4: Subject-wise result of Grade 10 (2021–22)

Source: Punjab Economic Survey (2022–23)

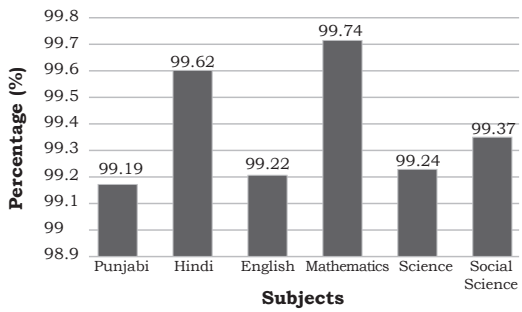

Fig. 5: Subject-wise result of Grade 10 (2022–23)

Source: Punjab Economic Survey (2023–24)

the Punjab Educare App, ensuring continuity of instruction and online monitoring during school closures. This adaptation not only prevented learning loss but also strengthened students' digital literacy and self-learning capacities—both integral to the PPPP framework.

Senior secondary outcomes (Grade 12): Longitudinal comparison (2018–23)

At the senior secondary level, PPPP's long-term impact was evaluated using PSEB board data from 2018 to 2023 across major subjects, including English, Mathematics, Science, and Social Studies (Refer: Figs 6 and 7).

- Between 2018 and 2023, the overall pass percentage for Grade 12 increased from 88.36 per cent to 96.95 per cent, reflecting a consistent improvement of nearly 9 percentage points.
- The distribution of top-performing students (A+ and A grades) widened across almost all disciplines, except for minor variations in Geography and Physical Education, where

performance slightly plateaued.

This steady progression demonstrates the sustainability of PPPP's interventions beyond the primary stage. It also indicates that the foundational skills developed through early implementation (Grades 1–5) continued to yield dividends as students progressed through higher grades.

Importantly, the improvement in higher-grade results confirms that PPPP's strategies—teacher professional development, regular testing, and skill-based instructional methods—had a cumulative and compounding effect on learning trajectories. The continuity of improvement across academic levels validates the longitudinal strength of the programme.

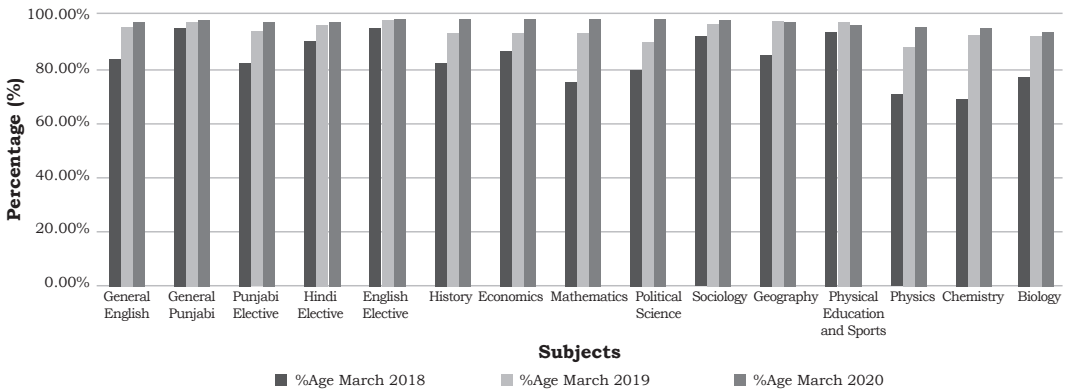

Fig. 6: Subject-wise result comparison of Grade 12 for 2018, 2019, and 2020

Source: pseb.ac.in

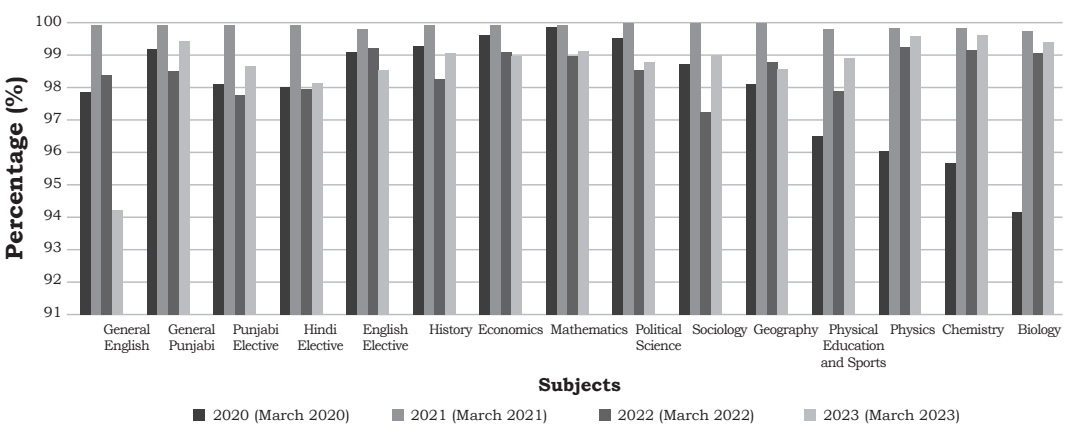

Fig. 7: Subject-wise result comparison (in percentage) for the years 2020, 2021, 2022, and 2023

Source: Punjab Economic Survey (2020–21, 2021–22, 2022–23, and 2023–24)

Subject-wise, Grade-level Learning Outcomes

Foundational Learning Outcomes (Grades 1–5)

Baseline achievement improved from 45.51 per cent to 88.44 per cent. Students demonstrated stronger Punjabi reading fluency, English phonics, and arithmetic operations such as addition, subtraction, and division.

Upper Primary Outcomes (Grade 8)

High achievers (A+ and A) increased from approximately 39 per cent to 52 per cent. English, Mathematics, and Science showed the sharpest gains, reflecting improved conceptual and applied understanding.

Secondary Outcomes (Grade 10)

A+ and A performers rose from nearly 46 per cent to 64 per cent. Mathematics and Science achievements increased significantly due to activity-based learning and digital content support.

Senior Secondary Outcomes (Grade 12)

The pass percentage increased from 88.36 per cent in 2018 to 96.95 per cent in 2023. Improvements in English, maths, and science indicate the sustained long-term impact of PPPP interventions

Conclusion

The study concludes that the Parho Punjab Parhao Punjab (PPPP) programme has functioned as a comprehensive and systematically implemented learning enhancement initiative that has significantly improved educational outcomes across grade levels in Punjab. The findings indicate that PPPP's outcomes are a direct result of its structured implementation mechanisms—teacher training, Mehal-based grouping, continuous assessment, digital integration, and monitoring. At the same time, the results highlight specific implementation gaps that must be addressed for long-term sustainability.

Strengthened Foundational Learning Through Structured Implementation

The baseline–mid-test–post-test gains (from 45.51 per cent to 88.44 per cent) demonstrate that PPPP's pedagogy—particularly TaRL-based grouping, activity-based learning, and targeted remediation—successfully addressed early literacy and numeracy deficits. The Mehal System enabled teachers to tailor instruction to learning levels rather than grade expectations. However, variations across districts suggest uneven fidelity of implementation and a need for deeper support for teachers in remote or resource-poor schools.

Sustained Academic Growth Linked to Pedagogical and Administrative Interventions

Improved outcomes for Grades 8, 10, and 12 between 2019–23 reflect the cumulative impact of foundational learning, ongoing assessments, and strengthened teacher capacity.

The increasing proportion of A+ and A grades indicates enhanced subject mastery. Nevertheless, disparities in performance between urban and rural clusters show that consistent monitoring and resource distribution remain critical.

Teacher Training as Both a Strength and a Challenge

The cascading teacher training model played a crucial role in standardising instructional practices. Teachers adopted activity-based, experiential methodologies, and classroom engagement improved. Still, the cascading approach resulted in dilution of training quality at lower tiers, indicating a need for continuous mentoring, on-site academic support, and digital refresher courses.

Continuous Assessment Enabled Timely Feedback but Highlighted Capacity Gaps

Baseline, mid-test, and post-test assessments created a robust feedback mechanism that improved instructional decision-making. Yet, some teachers reported difficulty in administering assessments efficiently and interpreting data, underscoring the need for simplified tools and capacity building in data literacy.

Digital Interventions Enhanced Reach but Exposed the Digital Divide

The Punjab Educare App, Parho Punjab App, and e-Content supported learning continuity during COVID-19 and strengthened ICT integration. However, inconsistent device availability, network barriers, and varying digital competence among teachers and parents emerged as limiting factors in fully realising digital learning benefits.

Systemic and Sustainable Impact with Notable Structural Challenges

The upward performance trend from 2018 to 2023 confirms PPPP's potential as a long-term reform model. Nonetheless, sustained success requires continued investment in teacher support, monitoring teams, and infrastructure. The programme must also address implementation inconsistencies across districts to prevent widening disparities.

Implications

Pedagogical Implications

- PPPP shows that level-based teaching and activity-driven methods yield strong learning gains; however, they require regular teacher mentoring and reduced administrative load for teachers to be fully effective.
- The programme demonstrates the value of formative assessment and feedback loops, but also reveals the need for simplified assessment tools and support for teachers in data interpretation.

Institutional Implications

- The monitoring system (state, district, and block levels) improved accountability but placed heavy demands on existing staff;

- future design must ensure balanced workloads and role clarity.
- Digital initiatives expanded access but highlighted infrastructural inequities across districts, signalling the need for targeted digital inclusion programmes.
- School-level implementation benefited from parental engagement and community participation, although participation levels varied significantly by region.

Policy Implications

- PPPP aligns closely with Samagra Shiksha, NIPUN Bharat, and SDG-4 goals; however, policy must address variation in programme uptake, especially in marginalised communities.
- A state-wide data dashboard could improve real-time decision-making and ensure transparent monitoring across districts.
- Policies should mandate periodic external evaluations to prevent internal bias in programme reporting.

The analysis of the Parho Punjab Parhao Punjab (PPPP) scheme highlights several areas where implementation can be strengthened to enhance programme effectiveness and sustainability. First, there is a need to institutionalise continuous teacher coaching and mentoring rather than depending solely on one-time training workshops, as ongoing support is crucial for maintaining instructional fidelity. Ensuring the effectiveness of the Mehal learning-level grouping system also requires stricter adherence to competency-based grouping rather than administrative convenience, supported by improved monitoring. Standardising assessment practices and digitising data collection would reduce teacher workload, minimise inconsistencies, and enable real-time progress tracking. To further improve PPPP interventions, digital infrastructure must be expanded through increased device access, reliable internet connectivity, and digital literacy training for teachers and parents. Supplementary materials should be diversified to include multilingual, inclusive, and contextually adapted content, ensuring relevance across diverse learner groups. Additionally, large schools would benefit from the deployment of teaching assistants to provide targeted academic support and reduce the burden on classroom teachers. At the policy level, Punjab's PPPP model could be scaled to other states, but such expansion must be contextually adapted to regional socio-economic and linguistic variations. Public–private partnerships can also play an important role in developing high-quality assessments, digital content, and teacher training modules. Vertical curricular alignment is essential to ensure that foundational learning gains at the primary stage translate into continued academic

progress in secondary grades. Finally, future research should focus on comparative evaluations of PPPP with other national and international programmes such as NIPUN Bharat and TaRL Africa, along with longitudinal tracking of student cohorts to measure long-term learning retention and higher-order skill development. Studies examining teacher motivation, workload, and classroom climate would further illuminate contextual factors that influence the success of PPPP and similar large-scale learning reform initiatives.

References

Achuonye, K.A. 2012. A Comparative Study of Computer Literacy in Urban and Primary Schools in Rivers State of Nigeria. *Journal of Sociological Research.* Vol. 3, No. 2, p. 563. http://doi.org/10.5296/jsr.v3i2.2893

Angrist, N., D.K. Evans, D. Filmer, R. Glennerster, F.H. Rogers, and S. Sabarwal. 2020. How to Improve Education Outcomes Most Efficiently? A Comparison of 150 Interventions Using the New Learning-adjusted Years of Schooling Metric (Policy Research Working Paper). World Bank Group.

ASER Centre. 2019. *Annual Status of Education Report (Rural) 2018.* ASER Centre. http://www.asercentre.org

———. 2021. *Annual Status of Education Report (Rural).* ASER Centre. http://www.asercentre.org

———. 2022. *Annual Status of Education Report 2022.* ASER Centre. http://www.asercentre.org

———. 2023. *Annual Status of Education Report 2023: Beyond Basics.* ASER Centre. http://www.asercentre.org

Azevedo, J.P., D. Goldemberg, S. Montoya, R. Nayar, H. Rogers, J. Saavedra, and B.W. Stacy. 2021. Will Every Child be Able to Read by 2030? Defining Learning Poverty and Mapping the Dimensions of the Challenge (Policy Research Working Paper). World Bank Group.

Banerjee, A., R. Banerji, E. Duflo, R. Glennerster, and S. Khemani. 2010. Pitfalls of Participatory Programs: Evidence from a Randomized Evaluation in Education in India. *American Economic Journal: Economic Policy*. Vol. 2, No. 1, pp. 1–30.

Banerjee, A., R. Banerji, J. Berry, E. Duflo, H. Kannan, S. Mukherji, M. Shotland, and M. Walton. 2016. Mainstreaming an Effective Intervention: Evidence from Randomized Evaluations of "Teaching at the Right Level" in India (NBER Working Paper No. 22746). *National Bureau of Economic Research.* https://www.nber.org/papers/w22746

Bhula, R., and John, F. 2020. A Better Education for All During—And After—the COVID-19 Pandemic. *Stanford Social Innovation Review.* https://ssir.org

Dunlosky, J., K.A. Rawson, E.J. Marsh, M.J. Nathan, and D.T. Willingham. 2013. Improving Students' Learning with Effective Learning Techniques: Promising Directions from Cognitive and Educational Psychology. *Psychological Science in the Public Interest.* Vol. 14, No. 1, pp. 4–58.

Economic and Statistical Organization, Department of Planning, Government of Punjab. 2020. *Punjab Economic Survey 2019–2020*. https://www.esopb.gov.in

———. 2021. *Punjab Economic Survey 2020–2021*. https://www.esopb.gov.in

———. 2022. *Punjab Economic Survey 2021–2022*. https://www.esopb.gov.in

———. 2023. *Punjab Economic Survey 2022–2023*. https://www.esopb.gov.in

———. 2024. *Punjab Economic Survey 2023–2024*. https://www.esopb.gov.in

Filmer, D., H. Rogers, N. Angrist, and S. Sabarwal. 2020. Learning-adjusted Years of Schooling (LAYS): Defining a New Macro Measure of Education. *Economic Education Review*. Vol. 77, Article 101971. https://doi.org/10.1016/j.econedurev.2020.101971

Gajjar, N.B. 2012. A Study of Teachers' Awareness about Computers. *Research Analysis and Evaluation*. Vol. 3, No. 30, pp. 9–10.

Hanushek, E.A. and L. Woessmann. 2012. Do Better Schools Lead to More Growth? Cognitive Skills, Economic Outcomes, and Causation. *Journal of Economic Growth*. Vol. 17, pp. 267–321.

Ministry of Education, Government of India. 2021–22. *Samagra Shiksha: Annual Work Plan and Budget 2021–2022*. Department of School Education and Literacy.

———. 2022–23. *Samagra Shiksha: Annual Work Plan and Budget 2022–2023*. Department of School Education and Literacy.

———. 2019–20. *Appraisal Report of Annual Work Plan and Budget 2019–2020: Punjab*. https://dsel.education.gov.in

Pratham. 2019. *Annual Status of Education Report (ASER) 2019*. https://www.pratham.org/wp-content/uploads/2020/11/aserreport2019earlyyearsfinal.pdf

Sowa, P., R. Jordan, W., Ralaingita and B. Piper. 2021. Higher Grounds: Practical Guidelines for Forging Learning Pathways in Upper Primary Education. RTI Press Occasional Paper No. OP-00692105

Vygotsky, L.S. 1978. *Mind in Society: The Development of Higher Psychological Processes*. Harvard University Press.

World Bank. 2018. *World Development Report 2018: Learning to Realize Education's Promise*. https://www.worldbank.org/en/publication/wdr2018