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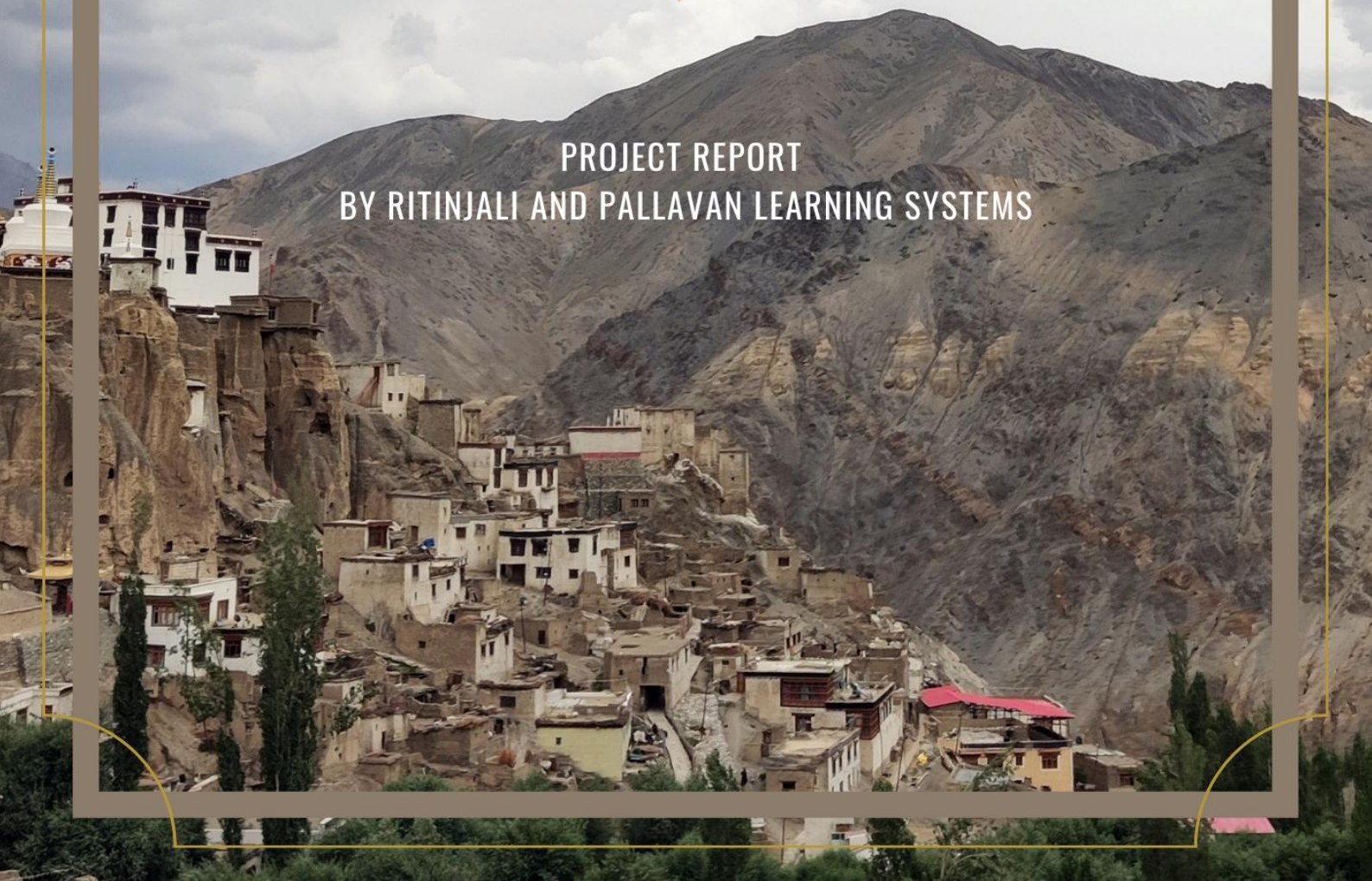
TEACHER ENRICHMENT PROGRAMME

LADAKH 2026

MATHEMATICS & ENVIRONMENTAL SCIENCES
(PRIMARY YEARS)

20TH TO 24 JULY 2026

LEH
KARGIL



PROJECT REPORT
BY RITINJALI AND PALLAVAN LEARNING SYSTEMS

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Executive Summary

The Teacher Capacity Building Programme for Competency-Based Teaching in Mathematics and Environmental Studies/World Around Us (WAU), Ladakh 2026 was developed in partnership with the School Education Department, Union Territory of Ladakh, in response to the need to strengthen teachers' confidence, conceptual understanding and classroom practice following the transition to the CBSE curriculum. Particular concerns included weak conceptual foundations in Mathematics and Science, dependence on textbooks, varied student learning levels, and the need to translate the expectations of NEP 2020, NCF-SE 2023 and the revised NCERT curriculum into everyday teaching.

A five-day Teacher Enrichment Programme was organised for 160 teachers across Leh and Kargil, divided into Mathematics and WAU cohorts. The programme adopted an experiential professional-learning model in which teachers participated as learners and experienced the learner-centred, competency-based approaches they were expected to use in their own classrooms. A common daily Zero Period focused on teacher identity, growth mindset, wholistic development, formative assessment and reflective practice, while the subject-specific sessions emphasised conceptual understanding, inquiry, activity-based learning, contextualisation, low-cost Teaching-Learning Materials, questioning and continuous assessment.

The programme was informed by consultations with education officials and a needs-assessment survey of 362 teachers. The survey highlighted significant foundational learning gaps, mixed learning levels, difficulties with mathematical concepts and reasoning, limited use of hands-on materials, challenges in lesson planning and formative assessment, and the importance of language and local contextualisation. These findings shaped the content and methodology of the five-day programme.

Participant reflections and facilitator observations indicate several important immediate outcomes. Teachers reported increased professional confidence, stronger conceptual understanding and greater readiness to use learner-centred approaches. In Mathematics, the programme encouraged a shift from procedural teaching towards conceptual progression, visualisation, reasoning and the use of concrete and pictorial representations.

In WAU, teachers responded strongly to experiential, inquiry-based and locally contextualised approaches that connected curriculum themes with Ladakh's environment, culture, communities and everyday life. Across both subjects, participants valued formative assessment, collaborative learning, reflective practice, and practical strategies they could transfer directly to their classrooms.

The programme also highlighted areas requiring continued attention. Teachers requested greater support for differentiated and inclusive teaching, mixed-ability and multigrade classrooms, difficult curriculum concepts, digital tools, competency-based assessment and classroom implementation. There was also strong demand for longer, more sustained professional learning, including additional demonstrations, practical resources, and follow-up support.

The central conclusion is that the five-day programme should be viewed as a starting point for sustained professional development rather than a stand-alone intervention. Future work should combine continued resource sharing and mentoring with deeper engagement with selected teachers, schools or clusters so that changes in teacher confidence and intended practice can be followed through into classroom implementation and, ultimately, improvements in student learning.



1. Introduction

The Ladakh Teacher Enrichment Project emerged from discussions with the School Education Department, Union Territory of Ladakh, on the need to strengthen the professional capacity of government school teachers and improve the quality of teaching and learning. The need became particularly important following Ladakh's transition to the CBSE curriculum approximately three years earlier, which introduced new expectations relating to competency-based learning, pedagogy, assessment and the use of revised NCERT textbooks.

Academic performance in Grades 10 and 12, particularly in Mathematics and Science, had remained a concern. Discussions with education officials suggested that these difficulties should not be addressed only at the examination stage — instead, stronger conceptual foundations needed to be developed earlier in the learning journey. The programme therefore adopted a bottom-up approach, beginning with teachers of Grades 3–5, where children move from foundational learning towards increasingly complex disciplinary concepts.

The project also recognised Ladakh's distinctive educational context. Schools are dispersed across a large and geographically demanding region, teachers often work across multiple grades and subjects, and opportunities for sustained professional development can be uneven. The programme was therefore conceived as both a capacity-building intervention and an opportunity to understand teachers' classroom realities, confidence, conceptual challenges, and professional support needs.

Against this background, a five-day Teacher Enrichment Programme was developed in Mathematics and Environmental Studies/World Around Us (WAU), with the longer-term aim of strengthening the conceptual and pedagogical foundations on which learning in the higher grades depends.

2. Project Rationale

The programme was designed to bridge the gap between curriculum reform and classroom implementation. NEP 2020, NCF-SE 2023, the CBSE curriculum and revised NCERT textbooks place greater emphasis on conceptual understanding, competencies, application, inquiry, problem-solving and formative assessment. However, consultations with the School Education Department, DIET officials and teachers indicated that many participants required practical support to translate these expectations into everyday teaching.

A particular concern was confidence in Mathematics. Education officials highlighted a general fear of the subject among students and, at times, among teachers. The needs assessment indicated that teachers were often more comfortable with procedures and algorithms than with explaining concepts, visualising mathematical ideas, diagnosing misconceptions or helping children reason about why a method works.

A second concern was the growing dependence on prescribed textbooks following the transition to CBSE. Teachers needed support to distinguish between the curriculum and the textbook, and to use textbooks, local examples, teaching-learning materials and other resources as tools for developing concepts and competencies rather than as content to be completed sequentially.

In WAU, the programme sought to strengthen the ability to connect learning across science, social science, geography, culture, environment, community and everyday life. In Mathematics, it emphasised conceptual progression, recognising that later learning depends on secure foundations in earlier ideas. Across both subjects, the central shift moved from content coverage to conceptual understanding, connectedness, application, and evidence of learning.

The programme therefore combined subject-specific conceptual development with practical pedagogy. Teachers experienced learner-centred approaches themselves, analysed the pedagogical reasoning behind them and considered how these approaches could be adapted to their own classrooms and local contexts.

3. Project Objectives

Overall Goal

To strengthen the confidence and professional capacity of teachers of Grades 3–5 to provide conceptually sound, competency-based and learner-centred teaching in Mathematics and Environmental Studies/World Around Us.

Specific Objectives

- strengthen teachers' understanding of the educational and pedagogical expectations of NEP 2020, NCF-SE 2023 and the revised curriculum;
- build confidence in using revised NCERT textbooks as learning resources rather than treating the textbook as the curriculum;
- deepen conceptual understanding of key Mathematics and WAU topics and strengthen teachers' ability to identify and address misconceptions;
- develop competency-oriented lesson planning that aligns learning objectives, learning experiences, questioning and assessment;
- expand teachers' repertoire of experiential, collaborative, inquiry-based and activity-based pedagogies;
- strengthen the use of the Concrete–Pictorial–Abstract (CPA) approach and low-cost teaching-learning materials, particularly in Mathematics;
- improve questioning and formative assessment practices so that evidence of learner understanding informs teaching;
- support differentiated and inclusive responses to varied learning levels and multigrade classroom realities;
- promote reflective practice and professional learning; and
- increase teachers' confidence in planning, facilitating and assessing learning in Mathematics and WAU.

The objectives were informed by the pre-programme needs assessment and consultations with education officials. Teachers identified both subject-specific conceptual difficulties and broader pedagogical needs, enabling the facilitation team to prioritise the areas

requiring the greatest support and to adapt the programme as new needs emerged during the five days.





4. Programme Design and Learning Philosophy

The programme was built on the principle that teachers are more likely to understand and adopt effective pedagogy when they experience it themselves as learners. Accordingly, the training modelled the active, competency-based, and reflective classroom practice envisaged under NEP 2020 and NCF-SE 2023.

Two teams of five each facilitated the programme: 1 project coordinator, 2 Mathematics facilitators, and 2 WAU facilitators in Leh and Kargil.

Core Design Principles

- *Adult learning*: teachers' professional experience and classroom knowledge were treated as learning resources.
- *Experiential learning*: participants engaged directly in activities, investigations, discussions and problem-solving.
- *Modelling effective pedagogy:* facilitators demonstrated the classroom practices they expected teachers to use.
- *Reflective practice*: participants examined what they learned, how they learned it and how the approach could be transferred to their classrooms.
- *Continuous feedback*: facilitator observation, questioning, participant responses and reflections were used to adapt teaching during the programme.

Learning Through Experience

Wherever possible, sessions were facilitated as model lessons. Teachers first participated as learners and then unpacked the experience with facilitators. Debriefs focused on the intended competency, sequence of learning, use of prior knowledge, choice of activities and resources, questioning, collaboration, differentiation, formative assessment and possible adaptations for different classroom contexts.

Making Planning and Pedagogy Visible

Lesson planning was treated as a practical design process rather than an administrative requirement. Model lessons demonstrated alignment between competencies, learning objectives, learning experiences and assessment. Facilitators also made their pedagogical decisions explicit so that teachers could see not only what was being done but why it was being done.

Learner-Centred and Contextualised Pedagogy

Participants experienced collaborative learning, inquiry, mathematical investigations, activity-based learning, real-life contextualisation, thinking routines, purposeful questioning and the use of low-cost teaching-learning materials. These were presented as adaptable strategies rather than fixed techniques, with emphasis on selecting approaches according to the concept, competency, learner need and classroom context.

Reflection and Formative Feedback

Reflection and formative assessment were embedded throughout the programme. Facilitators used participant questions, tasks, discussions and daily reflections to identify uncertainty and misconceptions and to modify subsequent explanations and activities. In this way, the programme itself demonstrated how evidence of learning can inform teaching in real time.

Modelling the Classroom Envisaged by NEP and NCF

Taken together, the programme modelled a classroom in which learners are active participants, concepts are connected to experience and context, understanding takes precedence over memorisation, collaboration and inquiry are encouraged, assessment supports learning, individual differences are recognised, and reflection contributes to continuous improvement.

5. Participants

Category	Participants
Maths – Kargil	40
WAU – Kargil	32
Maths – Leh	35
WAU – Leh	36
Total Participants	**143**

A total of 143 teachers participated across four cohorts in Leh and Kargil. The available participant records provide the following subject- and district-wise distribution: List of Participants



6. Training Needs Assessment

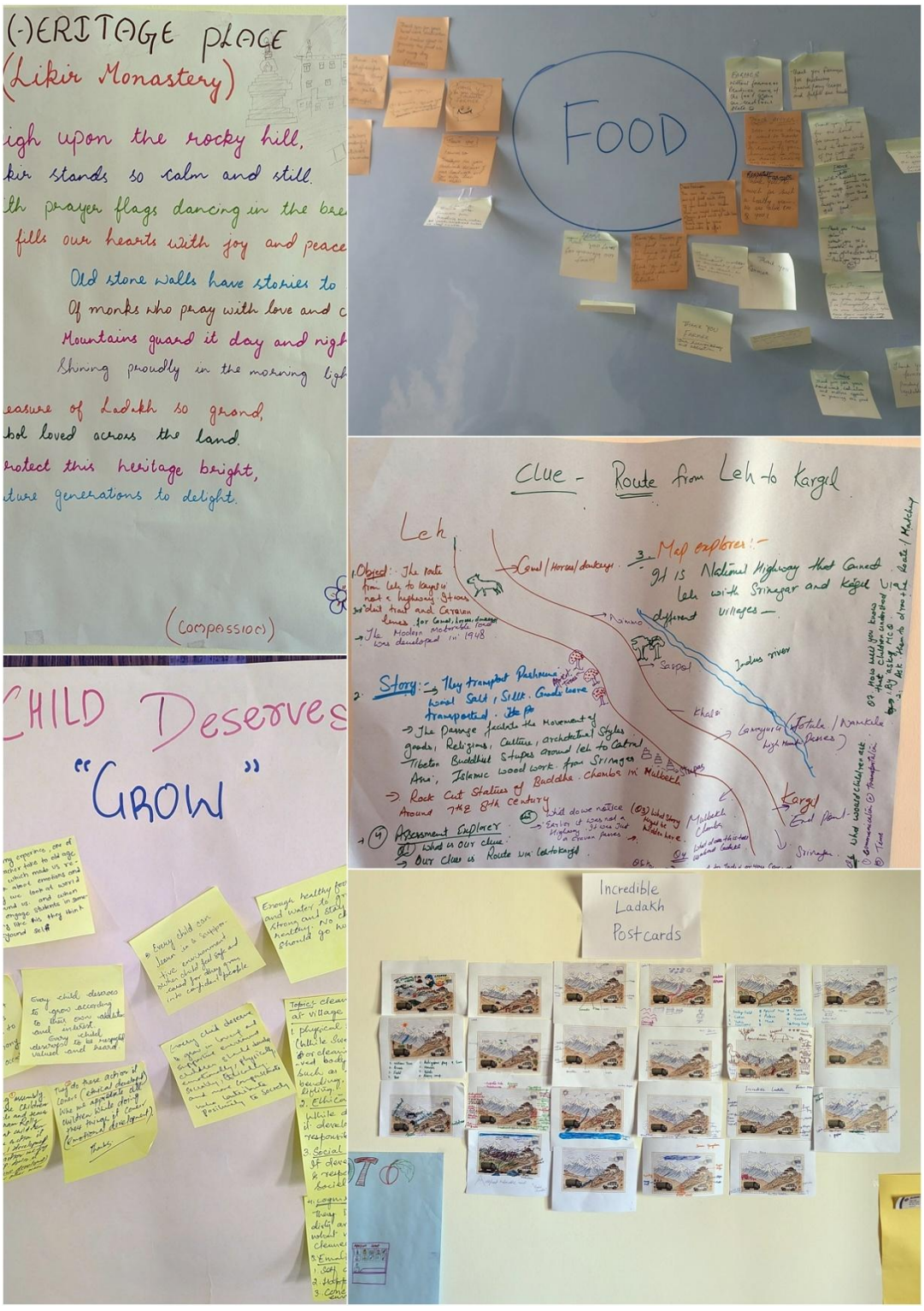
The programme design was informed by three sources: discussions with the School Education Department, consultations with DIET officials, and a teacher needs-assessment survey from Leh and Kargil. The survey received 362 submissions from teachers of Mathematics, WAU/Science and those teaching both subjects.

Key needs identified

- Foundational gaps and varied learning levels: 77% of respondents to the relevant item reported that gaps from Classes 1–2 were a major concern or affected at least some students in Classes 3–5; 61% identified widely differing learning levels as a daily challenge.
- Conceptual understanding in Mathematics: teachers identified fractions and decimals, geometry and shapes, division, measurement, word problems and application-based questions as areas requiring additional support. Responses pointed to the need to strengthen reasoning, visualisation and conceptual explanations alongside procedures.
- Lesson planning: 45% requested topic-wise lesson plans and 31% specifically wanted ready-to-use lesson plans, indicating a need for practical support in aligning competencies, objectives, activities, questioning and assessment.
- Assessment: class tests, oral questioning and observation were common. Although 68% reported identifying and addressing common mistakes after assessment, only 33% reported using assessment results to revise their teaching approach, indicating scope to strengthen formative use of evidence.
- Teaching-learning materials and CPA: approximately 51% reported using hands-on materials only once or twice a month. Time, availability of materials and limited training in their use were reported barriers.
- Language and contextualisation: around 75% reported that language affected student understanding significantly or moderately, while 69% felt that at least some topics were disconnected from students' local experience.

These findings informed the emphasis on conceptual teaching, differentiated support, lesson planning, questioning, formative assessment, low-cost TLMs, CPA and contextualised learning.

Needs-assessment dataset.



7. The Detailed Programme

The programme comprised a common daily Zero Period followed by subject-specific Mathematics and WAU sessions over five days.

Teacher Enrichment Programme — Leh & Kargil, Ladakh

Time	Session	Track	Day 1 20th July	Day 2 21st July	Day 3 22nd July	Day 4 23rd July	Day 5 24th July
10:00 – 10:30 am (Zero Period)	Joint Session All Teachers	Approach	Purpose The Joy of being a Teacher	Belief Every Child can Learn	Vision Educating the Whole Child	Practice Assessment that Helps Children Learn	Growth Teaching as Reflective Professional Practice
10:30 – 10:45 am	Tea Break						
10:45 am – 12:45 pm	Session 1	MATH	Knowing our Teachers	Number Sense & Place Values	Visualising Stories	Need of Fractions	Showcase of Learning
		EVS	Knowing our Teachers	Together We Belong	Incredible India	Our Environment — What Nature Tells Us	Food for Health: Colours, Cravings & Choices
12:45 – 1:45 pm	Lunch Break						
1:45 – 2:45 pm	Session 2 Part 1	MATH	Story of Math	Shapes Around Us	Bridging Gaps in Classroom	Ways of Fractions	Math Mela Playing Math games together
		EVS	Happy and Healthy Living: The Journey and the Gratitude	Living Together	Translating Incredible India to the Classroom	Our Environment — Creating Experiences for Learners	Building on Curriculum Continuity
2:45 – 3:00 pm	Tea Break						
3:00 – 4:00 pm	Session 2 Part 2	MATH	Story of Math (contd.)	Shapes Around Us (contd.)	Bridging Gaps in Classroom (contd.)	Ways of Fractions (contd.)	Closing
		EVS	Continuing: Happy and Healthy Living	Continuing: Living Together	Continuing: Translating Incredible India to the Classroom	Continuing: Our Environment	Closing
4:00 – 4:15 pm	Closing — Joint Session (All Teachers)		Reflections of the Day	Reflections of the Day	Reflections of the Day	Reflections of the Day	Reflections of the Day

Note: Session 0 (Zero Period), meal/tea breaks, and the daily Closing are joint sessions attended by all teachers together. Sessions 1 and 2 (Parts 1 & 2) run as parallel Math and EVS tracks.

This section provides an overview of the programme and its overall structure. It is organised into three key components: the Zero Period Programme, the World Around Us (WAU) Programme, and the Mathematics Programme. Each subsection outlines the purpose, design, and key features of the respective programme, highlighting how they contribute to learners' overall development and support the broader educational objectives of the initiative.

The Zero Period

Programme Overview

The Zero Period Teacher Enrichment Programme was designed as a series of short reflective morning sessions conducted before the main workshops each day. Rather than focusing on instructional techniques alone, the sessions encouraged teachers to reconnect with the purpose of teaching, examine their beliefs about learners, explore wholistic

education, rethink the role of assessment, and develop habits of reflective practice. Each session built upon the previous one, creating a coherent journey from personal reflection to professional growth.

Day 1 – Joy of Being a Teacher

Session Overview

The opening session invited teachers to pause from their daily routines and reconnect with the deeper purpose of teaching. Through reflective conversations and personal storytelling, participants revisited the experiences that inspired them to become educators and recognised the lasting impact teachers have on learners' lives.

Key Takeaways

The session reinforced that effective teaching is grounded in meaningful relationships, a clear sense of purpose, and a commitment to learner development. Participants recognised that their personal experiences and classroom stories play an important role in shaping their professional identity and practice. By beginning the programme with reflection rather than routine, the session established a thoughtful and purposeful foundation for the learning that would follow.

Day 2 – Every Learner Can Grow

Session Overview

Building on personal purpose, the second session challenged beliefs about learners' abilities. Teachers explored how expectations, feedback and opportunities influence student success, while recognising mistakes as valuable evidence for learning rather than indicators of failure.

Key Takeaways

The session reinforced the belief that every learner has the potential to develop when provided with appropriate support, opportunities, and high expectations. Participants recognised that teachers' beliefs, language, and responses have a significant influence on learners' confidence, engagement, and willingness to persevere. They also gained an appreciation of differentiation as a means of supporting diverse learning needs while maintaining common learning outcomes and ambitious expectations for all learners.

Day 3 – Educating the Whole Child

Session Overview

The third session broadened the focus from academic achievement to wholistic learner development. Teachers examined how classroom experiences contribute to learners' cerebral, emotional, physical, social and spiritual growth.

Key Takeaways

The session highlighted that the purpose of education extends far beyond academic achievement to the development of the whole child. Participants recognised that meaningful learning experiences should cultivate learners' thinking, emotional wellbeing, physical health, social relationships, and values alongside subject knowledge. They also came to appreciate that every classroom interaction has the potential to contribute to learners' wholistic development by integrating knowledge, skills, character, and responsible action.

Day 4 – Assessment That Helps Children Learn

Session Overview

The fourth session reframed assessment as a tool for understanding children's thinking and guiding future learning. Teachers reflected on how observation, questioning and analysis of mistakes can improve classroom practice.

Key Takeaways

The session reinforced that assessment should be used not only to measure learning but also to inform and improve teaching. Participants recognised that learners' mistakes are valuable sources of evidence that provide insight into their thinking and guide the next steps in instruction. They also appreciated that purposeful questioning and careful observation create opportunities for deeper understanding, making assessment an integral part of the learning process rather than simply an evaluation of achievement.

Day 5 – Teaching as Reflective Professional Practice

Session Overview

The final session encouraged teachers to adopt reflection as a continuous professional habit. Participants explored reflective teaching cycles, evidence-based decision-making, and practical actions to improve future lessons.

Key Takeaways

The session emphasised that continuous professional growth begins with thoughtful reflection on classroom experiences. Participants recognised that meaningful improvements in teaching should be guided by evidence from learners' work, participation, questions, and responses rather than assumptions or routine practice. They also appreciated that consistent, manageable reflective habits, practised over time, enable teachers to make informed decisions, refine their teaching approaches, and continuously enhance learners' experiences and outcomes.

The five-day Zero Period series formed a connected learning journey. Teachers first rediscovered their purpose, then examined their beliefs about learners, expanded their understanding of wholistic education, reimagined assessment as a means to support learning, and finally embraced reflective practice as a pathway to continuous improvement. The sessions fostered collaboration, meaningful dialogue and practical reflection, creating a strong foundation for the Teacher Enrichment Programme.

World Around Us (WAU)

This section presents a consolidated account of a five-day World Around Us (WAU) programme designed to help teachers cultivate mindfulness, social belonging, cultural understanding, inquiry-based science teaching, and health awareness in their classrooms. Delivered through a sequence of experiential and reflective sessions, the programme guided participants from personal practices of gratitude and mindful eating, through explorations of family and community diversity, to a locally grounded study of cultural identity, an inquiry-based approach to environmental science and continuous assessment, and finally to practical nutrition education. Across all sessions, the programme modelled the same experiential, activity-first pedagogy it asked teachers to bring back to their own classrooms.

Programme Objectives

The programme was designed to build a well-rounded set of teacher capacities spanning personal wellbeing, social-emotional understanding, cultural responsiveness, scientific inquiry, and health literacy. Its core objectives included:

- Cultivating gratitude, mindfulness, and compassion in students through sensory and reflective activities connected to food and its journey to the table.
- Helping teachers recognise and value the diversity of family and community structures represented in their classrooms, and examine assumptions about students' home lives.
- Building culturally responsive teaching practice by connecting local heritage and context to national curriculum themes such as "Incredible India."
- Strengthening inquiry-based teaching skills and competency-based, continuous assessment practices in environmental science.
- Equipping teachers to deliver practical, data-driven nutrition education that builds critical thinking rather than rote memorisation.
- Modelling a consistent set of thinking routines and experiential learning structures that participants could adapt directly for their own classrooms.

Overview of Learning Experiences

The programme opened with a session on happy and healthy living, introducing teachers to gratitude and mindfulness practices centred on food: a chain activity tracing the journey of a grain through many hands and seasons, followed by a mindful eating exercise using puffed rice, raisins, and peanuts to build sensory awareness and appreciation for the effort behind everyday meals.

The second session, "Together We Belong," shifted focus to family, community, and neighbourhood. Teachers began with an energiser exploring definitions of family through a bingo-style activity, then moved through a gallery walk of family images, role-card exercises representing varied family situations, and community-focused thinking routines, before designing classroom-ready materials such as posters and mini interviews with local resource persons.

The third session, "Incredible India," grounded national identity in local context by exploring Ladakh's culture and heritage through a simulated museum experience. Teachers examined incomplete postcards to challenge stereotypes, worked as "curators" investigating contextual clues, built exhibit panels, and gave and received feedback across exhibits, before adapting the activity design to their own classroom realities.

The fourth session turned to environmental science and continuous assessment. Teachers first experienced a modelling session as learners, using a Grade 4 chapter on nature to practise sensory observation, an ecological web activity, and inquiry into bird adaptations, before applying these methods themselves in an afternoon teach-back session where they designed and presented lessons for other environmental science chapters.

The programme concluded with a session on "Food for Health," in which teachers explored balanced nutrition through a hands-on "rainbow plate" activity and a data-driven "sugar shock" exercise decoding nutrition labels, bringing the programme full circle from mindful eating on the first day to critical, informed engagement with food and health on the last.

Key Themes and Insights

Gratitude and Mindful Eating

The opening theme centred on helping students develop gratitude for food and awareness of the many people and processes involved in bringing it to their plates. Sensory-based mindful eating, paired with reflection questions about food supply and the journey of a grain, was designed to shift students' perspectives from taking food for granted towards genuine appreciation and compassion.

Family and Community Belonging

A significant thread of the programme addressed the diversity of family and community structures that students bring into the classroom, including children raised by grandparents, families affected by army transfers, large joint families, and children in residential schools. Teachers were encouraged to check their assumptions about students' home lives and recognise the shared, cooperative work — such as canal cleaning or festival preparation — that sustains communities beyond the immediate family.

Local Heritage and Cultural Identity

Building on the theme of belonging, the programme extended into a deeper exploration of cultural identity through the lens of Ladakh, using the national "Incredible India" theme as a bridge between local heritage and the broader NCERT curriculum. Teachers examined local objects, roles such as Zing caretakers and monastery caretakers, and everyday practices, working to move understanding beyond stereotype towards a richer, more nuanced view of Ladakh as a living and diverse place.

Inquiry-Based Science and Continuous Assessment

The environmental science session emphasised competency-based, continuous assessment as an alternative to traditional written testing. Sensory observation, ecological web-building, and structured questioning were used to help teachers understand core scientific competencies such as observing, recording, and classifying natural elements, while

formative assessment techniques — including question distribution through informal methods rather than tests — modelled how ongoing, low-stakes assessment can be embedded naturally into inquiry-based lessons.

Health and Nutrition Literacy

The closing theme focused on building students' critical thinking around food and health, moving beyond memorised facts to practical skills such as classifying food groups, understanding balanced diets, and reading and interpreting nutrition labels — equipping students to evaluate health claims they may encounter outside the classroom.

Interactive Activities and Participant Engagement

Across all five sessions, the programme relied on experiential, activity-based learning rather than direct instruction, consistently placing teachers in the position of learners before asking them to design similar experiences for their own students. Recurring thinking routines — including see-think-wonder, connect-extend-challenge, colour-symbol-image, think-explore-puzzle, and claim-support-question — provided a shared pedagogical language that recurred across otherwise distinct topics, reinforcing their versatility as classroom tools.

- A chain activity and mindful eating exercise using puffed rice, raisins, and peanuts to build gratitude and sensory awareness around food.
- A family bingo energiser and gallery walk of family images, used to surface commonalities and diverse family structures among participants.
- Role-card group work depicting varied family situations, paired with round-robin discussion to challenge assumptions about students' home lives.
- A random-walk pairing activity and small-group discussion identifying shared community work and cooperation, such as canal cleaning and festival preparation.
- A card game matching local workers with their tools and roles, grounded in the Ladakh context.

- An incomplete-postcard, think-pair-share activity designed to surface and challenge stereotypes about Ladakh.
- A simulated "Museum Emergency Briefing," in which teachers took on curator roles, investigated contextual clues, and built exhibit panels, followed by a cross-group gallery walk and feedback exchange.
- A guided sensory visualisation of a home village, and a web-based ecological role-play using yarn to demonstrate the interdependence of natural elements.
- An inquiry-based session on bird adaptations, incorporating group work, discussion, and a non-traditional, chip-based method of distributing and assessing responses.
- A "rainbow plate" activity using newspaper and colour to represent food groups, and a "sugar shock" exercise converting nutrition-label data into a visual, sand-and-cup representation of sugar content.

Throughout these activities, teachers were consistently asked to move between the roles of learner, observer, and designer — experiencing an activity firsthand, discussing its purpose and underlying assumptions, and then adapting it for their own classroom context, grade level, or multi-grade setting.

Reflection

Reflection was woven into every session. Teachers were regularly asked to consider how their own assumptions — about families, about a region such as Ladakh, or about students' prior knowledge of nature — might shape their teaching, and to articulate how each activity's purpose connected to broader classroom goals. Structured debriefs followed nearly every activity, using the same thinking-routine language introduced earlier in the programme, which helped reinforce these habits of reflection as transferable practice rather than one-off exercises.

Teachers also treated assessment approaches as an object of reflection: they evaluated whether existing materials captured genuine understanding, discussed how to design handouts and rubrics that measure real shifts in perspective, and considered how continuous, competency-based assessment could replace or complement traditional

testing. This reflective thread culminated in teachers presenting their own adapted lesson plans and receiving structured feedback from peers and facilitators.

Practical Application Ideas for the Teachers

The programme was consistently oriented towards classroom-ready outcomes, with several practical implications for future practice:

- Teachers are equipped with a repeatable set of thinking routines that can be applied across subjects and grade levels, beyond the specific sessions in which they were introduced.
- The family and community activities offer teachers a framework for recognising and responding to diverse home circumstances without reinforcing assumptions or stereotypes.
- The Ladakh-based "Incredible India" activities provide a model for connecting local heritage and resource persons to national curriculum themes, adaptable to other regions and contexts.
- The modelling-and-teach-back structure used in the environmental science session offers a practical template for introducing inquiry-based methods and continuous, competency-based assessment in place of written testing.
- The nutrition education activities give teachers concrete, low-cost tools — such as label-reading exercises and visual sugar-content demonstrations — for building students' critical thinking around everyday health claims.
- Facilitator guidance throughout the programme emphasised that materials serve as adaptable talking points, encouraging teachers to tailor timing, activities, and lesson structures to their own classroom realities, including multi-grade settings.

Overall Outcomes

Across five days, the programme wove together gratitude, belonging, cultural identity, scientific inquiry, and health literacy into a single, coherent journey — one that consistently asked teachers to experience learning as their students would before redesigning it for their own classrooms. By anchoring abstract goals such as compassion, inclusion, and critical

thinking in concrete, sensory, and locally grounded activities, and by returning repeatedly to a shared set of thinking routines, the programme modelled a pedagogy that teachers can carry forward well beyond the specific topics covered. The result is not only a set of ready-to-use classroom activities, but a transferable approach to teaching that prioritises reflection, inquiry, and genuine understanding over rote instruction.

MATHEMATICS

The Five-day Mathematics Programme was designed to strengthen the pedagogical practice of mathematics teachers. Conducted through a series of interactive training sessions, the programme combined conceptual discussion, hands-on activity design, and reflective practice to help participants deepen their understanding of how children learn mathematics and how classroom teaching can be made more meaningful, concrete, and student-centred. Sessions progressively built on one another, moving from foundational number concepts to place value, shapes, visualisation, fractions, and finally to the design and showcase of Teaching Learning Materials (TLM), culminating in a collaborative demonstration of learning.

Programme Objectives

The programme was designed with the broad aim of enabling teachers to move beyond procedural, textbook-driven instruction towards approaches that build genuine mathematical understanding. Its objectives included:

- Strengthening teachers' own relationship with mathematics and examining how their beliefs and mindsets shape student learning and confidence.
- Building a strong conceptual foundation in pre-number skills, number sense, place value, shapes, and measurement before introducing standardised procedures.
- Equipping teachers with concrete-pictorial-abstract (CPA) strategies and hands-on, activity-based methods for teaching operations, fractions, and geometry.
- Helping teachers identify and address common student misconceptions in mathematics through structured, diagnostic approaches.

- Encouraging the design and use of low-cost Teaching Learning Materials (TLM) to make abstract concepts tangible for students.
- Aligning classroom practice with the NCERT curriculum while adapting textbook exercises to be more exploratory and student-centred.

Overview of Learning Experiences

The programme unfolded as a connected learning journey rather than a set of isolated sessions. It began by examining teachers' personal relationship with mathematics and the foundational pre-number skills — identification, matching, sorting, and classification — that underpin later numeracy. From this base, sessions progressed to number sense and place value, using number lines and physical measurement activities to help teachers understand how numerical concepts develop sequentially across grades.

Building on this numerical foundation, the programme moved into shape and spatial reasoning, encouraging teachers to notice shapes in their environment and construct them using simple materials such as straws. This was followed by a focus on visualising mathematical stories through the concrete-pictorial-abstract approach, using base-10 materials to model addition and subtraction problems, and on diagnosing and bridging gaps in classroom understanding through a structured quadrant system for analysing student misconceptions.

The final two days shifted focus to fractions, beginning with concrete introductions to halves and equivalent fractions using paper folding and shading, before advancing to fraction comparison using a grid-based visual method. The programme concluded with teachers designing and presenting their own Teaching Learning Materials, culminating in a showcase event where participants facilitated math games and activities built around the models they had developed.

Key Themes and Insights

Teachers' Relationship with Mathematics

A recurring theme throughout the programme was how teachers' beliefs and mindsets about mathematics influence student outcomes. Early sessions explored how attitudes and

stereotypes about mathematics teaching can shape classroom practice, and participants were encouraged to reflect on how their experiences with the subject influence how they teach it.

Building Number Sense from the Ground Up

Sessions emphasised that numeracy develops in stages, starting with pre-number concepts such as identification, matching, sorting, and classification, and progressing to a formal understanding of number sequences, place value, and operations. Number line activities were used extensively to help teachers see how measuring distance between numbers, recognising consistent intervals, and building relationships such as halves and doubles support a deeper grasp of place value and numerical progression across grades.

Shapes, Spatial Reasoning, and Environmental Connections

Participants explored how students perceive and classify shapes, linking this to real-world observation and hands-on construction using simple materials. This theme reinforced the broader curricular progression from number sense to measurement and geometry, encouraging teachers to align textbook content with more exploratory, student-centred activities.

Concrete-Pictorial-Abstract Visualisation

A significant portion of the programme was devoted to the concrete-pictorial-abstract (CPA) approach to teaching operations. Using story-based problems and base-10 materials, teachers practised representing numbers and operations concretely and pictorially before moving to abstract notation, reinforcing the principle that visualisation strengthens conceptual understanding, particularly for students who struggle with abstract procedures alone.

Diagnosing and Bridging Learning Gaps

Teachers were introduced to a quadrant-based system for identifying and categorising common student misconceptions in mathematics. This diagnostic approach was designed

to help teachers ask more targeted questions, model solutions more effectively, and facilitate group work around textbook questions in ways that directly address the roots of student misunderstanding.

Understanding and Comparing Fractions

The later sessions built a progressive understanding of fractions, beginning with defining a "whole" and dividing it into equal parts using concrete materials such as paper sheets, circles, and squares. Participants explored equivalent fractions through folding and shading, discovering that different divisions of a whole can represent the same value. This was followed by a grid-based method for comparing fractions, covering unit fractions and improper fractions, and comparing quantities based on numerators, denominators, and their relationship to one — both visually, using a diagonal line on a grid, and conceptually.

Teaching Learning Materials (TLM) and Practical Application

The programme placed strong emphasis on translating theory into classroom-ready practice through the design of Teaching Learning Materials. Teachers worked with resources such as straw models to teach concepts including angles, shapes, and triangles, and were encouraged to design their own activities at home for later presentation. This culminated in a dedicated showcase, or "mela," where teachers facilitated math games and activities built around their TLM models.

Interactive Activities and Participant Engagement

The programme stood out for its consistently hands-on, participatory format. Rather than relying on lecture-style delivery, sessions were structured around activities that required teachers to physically and mentally engage with mathematical concepts as learners themselves, before translating those experiences into classroom strategies.

- A movement-based activity in which participants physically positioned themselves in the room to indicate agreement or disagreement with given statements, encouraging open reflection on beliefs and perspectives.
- Classification exercises using shapes, requiring teachers to group objects in multiple ways and discuss the reasoning behind different approaches.

- Number line construction and labelling activities using stickers, used to explore intervals, place value, and numerical patterns such as halves and doubles.
- Exploration of number representations and dot patterns to surface common student misconceptions around numbers such as fifteen.
- Construction of shapes using straws, connecting environmental observation with hands-on geometry.
- Story-based problem solving using base-10 materials to model addition and subtraction concretely and pictorially.
- Paper folding and shading activities to demonstrate halves and equivalent fractions.
- Grid-based visual comparison of fractions using a 4x4 grid and diagonal reference lines.
- Design, presentation, and showcase of Teaching Learning Materials, including a culminating games-based "mela" event.

Across these activities, participants were regularly asked to connect their experience as learners back to classroom practice — redesigning textbook exercises, articulating concepts in their own words, and reflecting on how each activity might be adapted for their own students.

Reflection

Reflective practice was embedded throughout the programme rather than treated as a separate activity. Teachers were regularly prompted to consider student mindsets and actions, to evaluate whether existing textbook worksheets adequately supported conceptual understanding, and to identify patterns across activities that could be applied in their own classrooms. Sessions concluded with structured reflection points, and the programme as a whole ended with end-line reflections, photographs, and documentation to capture participants' learning.

Delivery logistics also informed the process itself: early technical and pacing challenges during sessions led facilitators to emphasise conciseness and clarity, resulting in more focused and better-structured presentations as the programme progressed. This iterative

refinement reflected the programme's broader emphasis on continuous improvement in teaching practice.

Practical Application Ideas for the Teachers

The programme was explicitly designed to translate into classroom impact. Several practical outcomes and implications emerged:

- Teachers are expected to redesign textbook activities to be more exploratory and student-centred, applying concrete-pictorial-abstract sequencing to their own classroom instruction.
- The quadrant-based diagnostic approach to misconceptions offers a reusable framework for teachers to identify gaps in student understanding and tailor their questioning accordingly.
- Teaching Learning Materials developed during the programme, such as straw models, provide low-cost, reusable classroom resources for teaching shapes, angles, and other concepts.
- A consolidated set of resources from the programme, including TLM instructions, is intended to be compiled and shared with participants for ongoing reference after the programme concludes.
- The emphasis on number lines, place value, and non-standard measurement units before standardised measurement offers a sequencing model that teachers can replicate when introducing new topics.

Overall Outcomes

Over the course of five days, the programme guided teachers through a coherent progression — from examining their own relationship with mathematics, through foundational number and shape concepts, to visualisation strategies, fraction understanding, and finally the creation of tangible teaching resources. Its consistent use of hands-on activity, reflective questioning, and concrete-to-abstract sequencing modelled the very pedagogical approach it sought to instil in participants. By grounding every concept in physical, visual, and story-based experience before moving to abstraction, the programme equipped teachers not only with new content knowledge but with a replicable

framework for making mathematics more accessible, engaging, and meaningful for their students.



8. Monitoring and Evaluation Design

The monitoring and evaluation framework was designed to document short-term professional learning, identify changes in participants' self-reported confidence and comfort, and provide facilitators with formative information during the programme. It did not seek to establish changes in classroom practice or student achievement within the five-day period.

Baseline Self-Assessment

A structured baseline self-assessment was administered on Day 1. Using Likert-scale responses, participants rated (a) their comfort in teaching key Mathematics and WAU concepts and (b) their confidence in using competency-based pedagogies, including group and collaborative work, project-based and inquiry learning, contextualisation, activity-based teaching, formative and competency-based assessment, questioning, differentiated instruction and reflective teaching.

Daily Reflective Practice

At the end of each day, participants reflected on what they had learned, what surprised them, what challenged or changed their thinking, and what they wished to try in their classrooms. These reflections supported participant learning and provided facilitators with immediate feedback for adapting subsequent sessions.

Endline Self-Assessment

At the end of the programme, participants completed the same broad confidence and comfort measures used at baseline, together with reflective questions on practices they intended to implement, aspects of the programme that most influenced their thinking, and additional support required.

Facilitators' Observations and Reflection

The reflections of the programme facilitators provide an additional perspective on the implementation and immediate outcomes of the Teacher Enrichment Programme.

9. Findings

The evidence presented comes from comparing baseline and endline self-assessments of participants, along with their qualitative responses to questions about the programme on the last day of the programme. The facilitators' reflections also provide some insights about the participants, which are discussed at the end.

Baseline Endline Comparisons

The following data are from the two locations of Leh and Kargil and from teachers in two subject cohorts. The numbers presented are the means of teachers' self-reported competency and confidence. Although it may not qualify for statistical significance, they are indicative of the progress that the teachers noticed in themselves.

WAU Leh

3.63	4.04	+0.41	25 / 25
BASELINE MEAN	ENDLINE MEAN	OVERALL GAIN	PARTICIPANTS (N)

The analysis compares pre-training self-assessments (Baseline, N=25) against post-training self-assessments (Endline, N=25) across 11 core teaching approaches and 8 WAU thematic domains on a 5-point Likert scale.

Key Performance Extremes

- **Highest Scoring Endline Competency:** Reflecting on and improving teaching practices (4.40)
- **Greatest Improvement:** Reflecting on and improving teaching practices (+0.92 / +26.44%)
- **Lowest Scoring Endline Competency:** Using collaborative learning strategies (3.64)
- **Least Absolute Improvement:** Connecting WAU concepts to real-life contexts (+0.24 / +6.19%)

Mathematics Leh

3.42	4.25	+0.83	30 / 25
BASELINE MEAN	ENDLINE MEAN	OVERALL GAIN	PARTICIPANTS (N)

The analysis compares pre-training self-assessments (Baseline, N=30) against post-training self-assessments (Endline, N=25) across 11 core teaching approaches and 5 mathematical concept domains on a 5-point Likert scale.

Key Performance Extremes

- **Highest Scoring Competency:** Conducting activity-based lessons (4.60)
- **Greatest Improvement:** Using inquiry-based learning (+1.39)
- **Lowest Scoring Competency:** Patterns & Algebraic Thinking (3.48)
- **Least Improvement:** Data Handling (+0.44)

WAU Kargil

3.29	3.38	+0.10	31 / 21
BASELINE MEAN	ENDLINE MEAN	OVERALL GAIN	PARTICIPANTS (N)

The analysis compares pre-training self-assessments (Baseline, N=31) against post-training self-assessments (Endline, N=21) across 11 core teaching approaches and 8 WAU thematic domains on a 5-point Likert scale..

Key Performance Extremes

- **Highest Scoring Competency:** Theme: Incredible India (3.62)
- **Greatest Improvement:** Theme: Incredible India (+0.65 / +21.95%)
- **Lowest Scoring Competency:** Designing competency-based assessments (3.05)
- **Least Improvement:** Adapting teaching to diverse needs (-0.21 / -6.32%)

Mathematics Kargil

3.21	3.71	+0.50	45 / 21
BASELINE MEAN	ENDLINE MEAN	OVERALL GAIN	PARTICIPANTS (N)

This evaluation assesses the impact of the 5-Day Teacher Professional Development Programme conducted for Mathematics teachers in Kargil. The analysis compares pre-training self-assessments (Baseline, N=45) against post-training self-assessments (Endline, N=21) across 11 core teaching approaches and 5 mathematical concept domains on a 5-point Likert scale.

Key Performance Extremes

- **Highest Scoring Competency:** Conducting project-based learning (4.14)
- **Greatest Improvement:** Using inquiry-based learning (+1.00 / +33.33%)
- **Lowest Scoring Competency:** Facilitating group work (3.05)
- **Least Improvement / Decline:** Using collaborative learning (-0.08 / -2.12%)

Analysis of Teachers' Final Reflection

The endline reflections indicate that the programme initiated an important shift in teacher thinking—from textbook coverage and teacher-led instruction towards conceptual understanding, experiential learning, formative assessment, contextualisation and active learner participation. Teachers reported increased confidence and identified concrete strategies for classroom application. At the same time, their reflections make a strong case for sustained professional development, particularly in conceptual hardspots, inclusive and mixed-ability pedagogy, practical classroom modelling and ongoing mentoring.

Across the four groups Mathematics–Leh, WAU–Leh, Mathematics–Kargil and WAU–Kargil, the analysis draws on reflections from 93 teachers and examines four questions: how the programme helped them become better teachers; what they intend to use in their classrooms; how the programme could be improved; and what they would like to learn next.Endline reflection analysis

The strongest message is that participants perceived the programme as **highly relevant, practical and professionally valuable**. Across both Mathematics and World Around Us, teachers described a shift away from conventional, teacher-led and textbook-dominated approaches towards **activity-based, learner-centred, experiential and reflective teaching**. They reported increased confidence, greater willingness to experiment with new methodologies, and clearer intentions to make students active participants in the learning process.

A second major finding is that the programme appears to have been particularly successful when teachers **experienced pedagogy themselves** rather than simply being told about it. Manipulatives, low-cost TLMs, number lines, fraction models, gallery walks, postcards,

inquiry activities, group work, answering signals and Check for Understanding were remembered because teachers could see how they worked in practice and could envisage using them in their own classrooms.

The reflections also point to a common shift in teachers' understanding of their role: from delivering content to facilitating learning. In Mathematics this was expressed through stronger emphasis on conceptual understanding, scaffolding, visualisation and reasoning; in WAU it emerged through contextualisation, inquiry, experiential learning and formative assessment.

At the same time, participants were clear that a five-day programme was only a beginning. Across the groups, teachers asked for longer training, more practical demonstrations, continued professional development, deeper treatment of difficult concepts, more resources, and stronger support for inclusive and mixed-ability classrooms.

Mathematics

1. Strengthening conceptual understanding

The Mathematics reflections from both Leh and Kargil suggest that one of the most valuable outcomes was improved conceptual clarity. Teachers reported that the programme helped clarify areas such as place value, arithmetic operations, fractions, decimals and related foundational concepts. In Leh, participants specifically described long-standing doubts being resolved and valued the progression from simple to complex concepts.

This is important because the reflections suggest that teachers were beginning to reconsider Mathematics as more than a set of algorithms and procedures. They valued approaches that allowed concepts to be represented physically, visually and contextually before moving towards abstraction.

2. Concrete and visual Mathematics

Low-cost TLMs and manipulatives emerged as one of the most consistently appreciated features of the Mathematics programme. Teachers referred particularly to fraction charts, number lines, place-value models, visual fraction representations and other concrete

resources. These were viewed as ways of making difficult or abstract mathematical ideas accessible to students.

In Kargil too, teachers identified place-value systems, number lines, fraction manipulatives and alternative approaches to arithmetic operations as practices they intended to use immediately.
The reflections therefore support the programme's emphasis on moving from:
Concrete experience → Visual representation → Conceptual understanding → Abstract Mathematics.

3. Greater teacher confidence

Both Mathematics cohorts reported increased self-confidence, professional efficacy and motivation. Leh teachers linked confidence to improved conceptual understanding and an ability to support learners who struggle. Kargil teachers also associated the programme with stronger lesson planning, classroom management and a renewed sense of professional pride.

This finding is particularly relevant given the wider concern around fear and lack of confidence in Mathematics. The reflections suggest that strengthening teachers' own understanding may be an important first step towards creating more positive mathematical experiences for students.

4. Shift towards active and inclusive pedagogy

Teachers showed strong interest in moving beyond lecture and rote teaching. They referred to:

- activity-based learning;
- group work and discussion;
- think-pair-share;
- encouraging students to explain their reasoning;
- storytelling;
- real-life contextualisation;
- questioning;

- formative and peer assessment; and
- scaffolded instruction for learners working at different levels.

Leh teachers particularly valued step-by-step teaching that could help learners who struggled with foundational concepts. Kargil teachers similarly identified peer explanation, group learning and real-life contextualisation as practices they intended to introduce.

5. Mathematics priorities for future professional development

The reflections also reveal that significant areas of need remain. Teachers requested further development in:

- fractions and fraction operations;
- decimals and percentages;
- multiplication and long division;
- place value;
- algebra and algebraic expressions;
- geometry and 3D shapes;
- measurement;
- area and perimeter;
- data handling;
- competency-based assessment;
- digital tools; and
- teaching mixed-ability classes.

Leh teachers were particularly interested in deeper treatment of NCERT textbook "hardspots" and upper-primary concepts. Kargil teachers continued to prioritise foundational arithmetic alongside inclusive pedagogy and assessment.

This suggests that future Mathematics development may be more effective if organised around selected conceptual hardspots in depth rather than attempting broad curriculum coverage.

World Around Us

1. Shift towards experiential and learner-centred teaching

The most prominent WAU finding is a strong movement from teacher-centred delivery towards experiential, activity-based and inquiry-oriented learning.

Leh teachers highlighted learner-centred teaching, activity-based methodologies, greater student engagement and improved lesson planning. In Kargil, teachers similarly emphasised active strategies, reflection and examining classroom experiences from the student's perspective.
This appears to have changed teachers' understanding of how WAU can be taught—not simply through textbook reading or factual explanation, but through exploration, dialogue, observation and experience.

2. Strong uptake of practical classroom strategies

WAU teachers identified a particularly rich range of strategies they intended to use.
In Leh these included:

- incomplete postcards;
- museum and gallery walks;
- picture clues;
- food-grain journeys;
- mindful eating;
- food sorting;
- group discussion;
- project work;
- real-life examples;
- Check for Understanding;
- answering signals; and
- formative assessment.

In Kargil, CFU and answering signals emerged particularly strongly, alongside inquiry-based learning, play-way methods, group work, community exploration and other interactive strategies.
The significance here is that teachers did not merely express general approval. They named specific practices they intended to implement, suggesting a high level of perceived classroom applicability.

3. Formative assessment as part of teaching

One of the clearest WAU outcomes was teachers' appreciation of formative assessment within the lesson.

Check for Understanding and answering signals were repeatedly identified as useful ways of knowing whether students had understood without relying only on formal tests. Teachers appeared to recognise that assessment can be used continuously to inform teaching and respond to different learning levels.

This represents a potentially important shift from assessment principally as measurement towards assessment as part of the learning process.

4. Contextualisation and connected learning

Another strong WAU theme was connecting learning with children's actual lives, families, communities, culture and environment.

Leh teachers valued real-world examples, family structures, community exploration and contextual activities. Kargil teachers wanted further support in linking EVS content with local culture, diverse communities, environmental issues and topics such as Incredible India and global warming.

The reflections therefore support a conception of WAU as an integrated area of learning rather than a collection of disconnected textbook topics.

5. Reflective practice and professional identity

Reflection appears particularly strongly in the WAU responses. Some Kargil teachers described learning to look at the classroom from the student's perspective and seeing themselves as teachers who are also learners.

This indicates that the programme may have influenced more than classroom techniques. It appears to have prompted some teachers to reconsider their professional role, their relationship with learners and the importance of continually examining their own practice.

6. Inclusion and mixed-ability classrooms

One of the strongest unresolved needs across both WAU cohorts concerns differentiation and inclusion.

Teachers requested greater support in:

- managing children working at different levels;
- differentiated instruction;
- multi-ability and multigrade classrooms;
- supporting struggling learners;
- engaging children with disabilities; and
- enabling all learners to progress without holding back those who are more advanced.

In Kargil, this was described as one of the most important priorities for future professional development. Leh teachers raised similar concerns about multi-level classroom management and inclusive practice.

Feedback on Programme Design

Teachers across the four groups were highly appreciative of the facilitators and programme design. Their recommendations were generally about deepening and extending the experience rather than fundamentally changing it.

Several common requests emerged.

Longer duration

Five days was widely regarded as insufficient, especially in Mathematics. Teachers wanted more time for discussion, practical work, Q&A, difficult textbook topics and application. Leh Mathematics teachers in particular suggested extending future programmes to approximately ten days.

More demonstrations and modelling

Participants wanted even more live classroom demonstrations, model lessons, hands-on practice, videos of effective teaching and peer sharing. This reinforces the finding that teachers learned strongly through seeing and experiencing pedagogy in practice.

More TLMs and practical resources

Teachers requested physical TLM kits and manipulatives that could help them translate workshop learning into classroom practice. This was especially evident among the WAU Leh and Mathematics Kargil groups.

Better alignment with classroom realities

Kargil Mathematics teachers specifically asked that future programme planning take greater account of grassroots classroom conditions, workload and administrative demands. This is an important systemic finding: pedagogical innovation cannot be considered independently of the conditions in which teachers are expected to implement it.

Future Professional Development Needs

Across the board, teachers show a strong appetite for continued learning.

Beyond subject-specific needs, several themes cut across Mathematics and WAU:

- Inclusive education and differentiation emerged as one of the most consistent priorities.
- Teachers also expressed growing interest in digital learning, educational technology and AI, particularly in the Leh WAU group.
- There was demand for further development in competency-based assessment, formative assessment and innovative pedagogy.
- Teachers wanted professional learning to be continuous rather than one-off, with refresher programmes, follow-up support and in some cases integrated Mathematics–WAU sessions.
- There was also an important call to extend training opportunities beyond the current participants and eventually reach all teaching faculty.

Facilitators' Reflection

While participant endline reflections capture teachers' perceptions of their own learning, facilitator observations provide insight into teachers' engagement during the programme, areas of conceptual and pedagogical need that became visible through interaction, and implications for future professional development.

Teachers demonstrated a strong willingness to learn, although engagement developed progressively.

Across the cohorts, facilitators observed that teachers were generally receptive and willing to strengthen their practice. In some groups, particularly those comprising experienced or senior teachers, there was initial hesitation towards unfamiliar methodologies. This appeared to reflect caution rather than rejection. As facilitators built relationships, listened to teachers' experiences and connected new approaches with existing practice, participation increased noticeably.

Confidence and conceptual understanding emerged as important needs in Mathematics.

The Mathematics facilitators observed that many teachers were comfortable with established procedures and algorithms but were less secure in explaining the

conceptual reasoning behind them. Difficulties became apparent when teachers were asked to visualise mathematical ideas, explain why a procedure works, connect concepts across grades, or represent abstract ideas through concrete or pictorial models.

This was particularly evident in areas such as number sense, operations, fractions, decimals, measurement and three-dimensional shapes. In Leh, teachers' questions increasingly shifted during the programme from asking which procedure should be used to asking why a method worked and how it could be explained to children.

Concrete, visual and low-cost resources made mathematical ideas more accessible.

Facilitators consistently observed strong engagement when Mathematics was explored through manipulatives and low-cost Teaching-Learning Materials. Paper fraction models, number and place-value representations, straw models, leaves, locally available materials and other concrete resources enabled teachers to experience abstract concepts differently.
The Kargil experience was particularly significant in demonstrating that meaningful activity-based Mathematics does not depend upon expensive materials. Teachers who initially raised concerns about resource availability were able to work effectively with simple materials drawn from their immediate surroundings.

World Around Us benefited strongly from contextualisation and connected learning.

In World Around Us, facilitators found that teachers responded particularly well when curriculum themes were connected with Ladakh's local environment, culture, food, communities and everyday life. Activities such as *Incredible India*, food and nutrition tasks, community exploration and environmental inquiry helped teachers see how textbook themes could become meaningful learning experiences.

The programme also helped demonstrate the interdisciplinary character of World Around Us. Topics could be explored through connections between science,

geography, social life, culture, livelihoods, economics and the natural environment rather than being treated as isolated pieces of content.

Teachers recognised that activities developed for one theme could often be adapted to other concepts and classroom contexts. In Leh, teachers explicitly valued the contextualisation of activities to Ladakh and expressed interest in integrating Mathematics and WAU where their teaching responsibilities crossed subject boundaries.

Teachers responded most strongly when they experienced pedagogy as learners.

One of the most consistent facilitator observations was the effectiveness of placing teachers in the position of learners. Rather than describing activity-based learning, inquiry, collaboration, questioning or formative assessment theoretically, facilitators modelled these practices and invited teachers to participate in them.

Teachers appeared particularly engaged when they experienced mathematical investigations, manipulatives, thinking routines, contextualised inquiry, collaborative activities and discussion themselves.
This strengthened one of the central principles of the programme: professional development is more powerful when teachers experience the kind of learning environment they are subsequently expected to create for children.

Broader classroom pedagogy requires continued attention.

The facilitators' reflections indicate that professional development needs to extend beyond subject knowledge. Teachers required practical support with classroom organisation and facilitation, including:

- organising effective group work;
- giving clear instructions;
- facilitating classroom discussion;
- engaging all learners;

- managing different learning levels;
- questioning for understanding;
- differentiation;
- multigrade teaching; and
- using formative assessments during instruction.

In EVS particularly, teachers indicated that they often had adequate familiarity with curriculum content but needed more practical strategies for engaging students and managing multigrade and mixed-ability classrooms.

Flexibility and responsiveness were essential to effective facilitation

Although the programme was carefully planned, facilitators frequently needed to modify activities, change pacing or introduce additional concepts in response to teachers' emerging needs.

In Leh Mathematics, for example, teachers requested additional work on decimals and other concepts outside the original programme design, while the planned Mathematics Mela was replaced by further conceptual exploration because teachers preferred to use the available time to deepen their understanding.

Similarly, EVS facilitators adapted activities according to the characteristics of the participating cohort.

The experience reinforces the value of a responsive professional-learning model in which baseline information provides an initial direction, but facilitators retain sufficient flexibility to respond to evidence of learning as the programme progresses.

The Leh and Kargil cohorts should not be treated as identical.

Facilitator reflections highlighted differences between the two locations in teacher experience, current teaching responsibilities, baseline understanding, motivation and classroom context. This suggests that a common programme framework can

provide overall coherence, but the content, examples, pacing and level of support should be adapted to individual cohorts.

Participant selection requires closer consideration.

An important implementation issue identified by facilitators was that some teachers assigned to subject-specific cohorts were not currently teaching that subject. In the Kargil Mathematics cohort, for example, some participants were not teaching Mathematics at the time of the programme. While they participated actively, the opportunity for immediate classroom application was consequently reduced.

Future programmes would benefit from aligning participant nomination more closely with teachers' current grade levels, subjects taught and professional-development needs.

Teacher motivation varies and should form part of programme design.

The participant groups included teachers with widely varying levels of experience, including some approaching retirement. Facilitators observed that some senior participants initially questioned the relevance of adopting new approaches late in their careers. However, engagement improved when discussions focused on the difference teachers could still make to the children currently in their care.

This indicates that professional development needs to address motivation and professional identity, not simply provide pedagogical techniques. Teachers need to understand why change matters and how new approaches can strengthen their own practice within the realities of their remaining professional careers.

Additional enabling competencies may require attention.

Facilitator observations, particularly in Kargil, identified differences in teachers' English-language proficiency and digital literacy. In some cases, limited confidence in spoken or written English affected participation, while varying levels of basic

digital literacy could constrain teachers' access to contemporary professional-learning resources and technology-supported teaching.

These areas were not the principal focus of the five-day programme, but they may need to be considered as enabling competencies within a broader teacher-capacity-building strategy.

One-off training is insufficient for demonstrating classroom impact

Perhaps the most consistent conclusion across the facilitator reflections was that five days can initiate professional learning but cannot, by itself, establish sustained changes in classroom practice.

Facilitators recommended mechanisms for continued engagement following the programme. Immediate support can be provided through the existing WhatsApp group, including sharing resources, TLM ideas, and responses to teachers' questions. Facilitators also proposed follow-up interactions after teachers return to their classrooms.



10. Challenges

The programme identified several implementation and system-level challenges:

- wide variation in teachers' conceptual preparedness, confidence, professional experience and current subject responsibilities;
- multigrade and multi-subject teaching, particularly in smaller schools;
- foundational learning gaps and significant differences in student readiness within the same classroom;
- language-related barriers affecting student understanding and, in some cases, teacher participation;
- limited familiarity with differentiated instruction, collaborative classroom management and formative use of assessment;
- varying levels of digital literacy;



11. Recommendations and Way Forward

Ministry of Education / School Education Department

The School Education Department may consider developing a phased and equitable professional development plan that systematically maps teacher participation and progressively extends capacity-building opportunities to the wider teacher population. This would help ensure that professional development is not repeatedly concentrated among the same group of participants, unless those teachers are being intentionally developed as mentors, resource persons or teacher leaders.

Subject-specific training nominations should, as far as possible, prioritise teachers who are currently teaching the relevant subjects and grade levels so that professional learning can be applied directly in classrooms. Where participants are nominated for a broader capacity-building purpose, their intended role should be clearly defined.

The Department may also consider establishing a sustained pilot with a defined group of schools or teachers. Working with the same cohort over an extended period would make it possible to examine how professional learning is translated into classroom practice and to generate more robust evidence of changes in teaching practices, student engagement and learning outcomes.

DIET

DIET can play an important role in sustaining the impact of the Teacher Enrichment Programme beyond the initial training period. Classroom observations may be used to examine the extent to which participating teachers are applying the approaches introduced during the programme and to identify areas where further support is required.

Classroom visits, teacher feedback and professional dialogue can also help identify continuing conceptual and pedagogical needs. This evidence should inform subsequent professional development rather than relying solely on one-time needs assessments.

DIET may further support teachers in contextualising and adapting programme resources to the realities of Ladakh, including multigrade classrooms, varied learning levels and locally available resources. Structured follow-up through mentoring, demonstration lessons, school visits and Professional Learning Communities would help teachers move from initial exposure to sustained classroom application.

School Leaders

School leaders have an important role in creating the conditions in which teachers can apply and sustain their learning. Trained teachers should be provided with opportunities to share practices with colleagues, demonstrate activities and discuss what they have learned from classroom implementation.

Schools can also encourage peer observation, collaborative lesson planning and regular discussion of student work and assessment evidence. These practices can help professional learning move from individual teachers to the wider school community.

School leaders should support teachers in experimenting with learner-centred and competency-based approaches and avoid treating textbook completion as the sole indicator of effective teaching. Greater attention should be given to evidence of student understanding, participation and progression.

Teachers

Teachers should be encouraged to apply new practices in manageable and purposeful steps rather than attempting to introduce multiple changes simultaneously. They should observe how these approaches influence student engagement, understanding and participation and use this evidence to refine subsequent teaching.

Assessment should increasingly be used as a source of information for instructional decision-making. Student responses, errors and misconceptions can provide valuable evidence of learning needs and should inform how concepts are retaught, reinforced or extended.

Teachers should also make active use of the existing WhatsApp group and shared resources as platforms for continued professional dialogue, resource exchange and collaborative problem-solving.

Going Forward

Future programmes would benefit from a stronger understanding of each participant cohort before training begins. Short orientation meetings, consultations with teachers and, where feasible, school or classroom visits would enable facilitators to understand local realities, current teaching responsibilities and specific areas of need.

Programme design should prioritise depth over breadth, particularly in difficult concepts, while ensuring that subject knowledge is integrated with practical classroom pedagogy. Professional development should also be differentiated according to teachers' experience, current subject responsibilities, grade levels and identified professional needs.

Most importantly, follow-up should be planned as an integral part of programme design rather than added after the training. Future programmes should include clear implementation tasks, mentoring opportunities and mechanisms for collecting evidence of classroom application so that professional learning can be tracked beyond the workshop and its longer-term impact can be assessed.



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