EPIC JOURNAL 2026

A Collection of Classroom Based Action Research Papers

FROM THE DESK OF EPIC TEAM

Dear Readers,

Welcome to the proceedings of the Ei Pedagogy Innovation Conference (EPIC) 2026—India's first practice-focused platform that celebrates and supports school teachers as classroom innovators.

EPIC was born from a simple but powerful belief: teachers know what works best for their students. When we help them turn everyday classroom ideas into evidence, we raise the bar for everyone. Whether it is trying something new in lessons, reorganising a syllabus, or finding creative ways to engage students—EPIC is where these ideas matter.

The inaugural EPIC conference was held on 31st January 2026 in Bangalore, bringing together educators from across India who had designed, implemented, and documented their own classroom experiments backed by evidence and reflective research. The response was extraordinary—over 120 abstract submissions from teachers exploring pedagogy through classroom-based research, and the conference reached full capacity.

The conference featured keynote addresses, panel discussions, workshops, interactive poster presentation booths from EPIC finalists, and spotlight presentations from the top three winners. It was a day of celebrating, learning, and networking—reimagining teaching one classroom at a time.

This volume presents twenty-five selected papers spanning a rich diversity of themes: from Socratic questioning in Computer Science to experiential sound labs, from Visible Thinking Routines in primary classrooms to SDG-centred inquiry projects, from flipped classroom pedagogy in English to unplugged AI activities for computational thinking. Each paper represents a teacher's authentic journey of observation, intervention, evidence gathering, and reflection.

EPIC is an initiative by Educational Initiatives (Ei), which believes in making a difference in education through personalised learning and ensuring that students learn with understanding. We hope these proceedings inspire educators everywhere to see their classrooms as laboratories of innovation and their everyday practices as worthy of rigorous reflection and sharing.

The EPIC Team

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The full conference was recorded and is available on YouTu

Part 1: https://www.youtube.com/watch?v=14SH8hy-7Jw

Part 2: https://www.youtube.com/watch?v=GFMYNkzPdO

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RIPPLE PEDAGOGY: REIMAGINING LEARNING LANDSCAPES THROUGH EXPANDING CIRCLES OF ENGAGEMENT

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Sample Size: 40

1. Introduction and Rationale

The spark for this study did not come from a policy document or a syllabus change. It began with a small classroom moment that exposed a larger problem. One of my brightest Class 10 students, a consistent topper in exams, walked out of the room one afternoon leaving all the fans and lights running. That action stayed with me. Here was a student who could flawlessly reproduce definitions, derivations, and numerical solutions, but who showed little awareness of the real-world application of what he had mastered.

The disconnect was striking: academic success did not translate into responsibility.

This incident became the trigger for my search to make learning more meaningful. It raised urgent questions:

What is the purpose of education if students excel in tests but remain indifferent to their environment?

Can classroom concepts be extended into lived experiences that ripple outward into homes and communities?

How do we harmonize knowledge with values and actions?

Aristotle's timeless words guided my thinking: "*Educating the mind without educating the heart is no education at all."* If we reduce education to grades and exams, we risk neglecting the human element — the ethical and responsible dimension of learning.

From this reflection emerged the idea of Ripple Pedagogy. It is a framework that reimagines learning as expanding circles of engagement. It begins with a single observation and then grows outward: from personal reflection, to collaborative inquiry, to school-level engagement, and finally to community action.

Ripple Pedagogy is grounded in the integration of three dimensions of learning:

- Head (Cognitive): conceptual mastery of scientific ideas.
- Heart (Affective): ethical reflection and emotional ownership of knowledge.
- Hands (Psychomotor): responsible application in daily life.

The rationale is clear: when these three dimensions are brought together, education moves beyond the classroom and prepares students to be thoughtful, responsible changemakers.

2. Action

The intervention was carried out over a six-week period from August to October 2025, with 40 students of Class 10, during the Physics unit on Electricity. My aim was to design a structured process where students could move from conceptual understanding to lived responsibility, while I gathered both quantitative and qualitative evidence of their learning.

a. Phase 1: Conceptual Foundation (Week 1)

We began with reinforcement of core concepts, Ohm's Law, resistance, current, power, and circuits. To check prior understanding, I administered a short diagnostic quiz. Students worked in pairs on practice problems and engaged in "think–pair–share" discussions of why energy is wasted when appliances are left running.

This stage anchored the Head of Ripple Pedagogy ensuring the cognitive foundation was strong.

b. Phase 2: Structured Inquiry (Weeks 2–3)

Students were introduced to the role of "home energy auditors." I designed a simple Audit Sheet where they recorded:

List of electrical appliances in use at home.

- Wattage of each appliance.
- Average hours of usage per day.
- Monthly units consumed (calculated in kWh).
- Cross-check against the actual household electricity bill.

Families were informed in advance, and while most cooperated, a few were hesitant to share bills. This created an opportunity to talk about the importance of authentic data and honesty in research. Students then brought their data back to class for comparison.

At the same time, I administered a 25-item Student Questionnaire (Appendix A) to capture baseline attitudes in four domains: problem-solving, collaboration, ethical responsibility, and agency. Responses were collected on a 1–5 Likert scale.

c. Phase 3: Analytical Reflection (Week 4)

Students were organised into inquiry circles of 6–7 members. Each group collated their audit findings and discussed patterns. To guide reflection, I posed open-ended prompts:

- Which appliance consumed the most energy?
- Were there any surprises in your household bill?
- What wasteful practices did you notice?
- How does this connect to what we studied about power and resistance?

The discussions soon deepened. Students compared findings and debated solutions. One group was astonished to find that their geyser consumed more than every fan in the house put together.

Another realised that leaving TVs and routers on standby added significantly to costs.

During these circles, students also responded in reflection journals. Selected excerpts later became part of my qualitative evidence.

d. Phase 4: Applied Action (Weeks 5–6)

Finally, students moved into the "Hands" dimension of Ripple Pedagogy that is action.

Groups designed campaigns to spread awareness. Activities included:

- Poster-making drives displayed in school corridors
- Thought for the day was performed during morning assemblies to talk about wasteful habits.
- Peer awareness sessions conducted in junior classes.
- Proposal-writing exercises where some groups suggested LED alternatives for classroom lights.

Each group's work was assessed using a Teacher Rubric covering creativity, critical reasoning, collaboration, and applied action on a 1–4 scale.

3. Data Collection Summary

a. Quantitative Data:

- Pre- and post-responses on the 25-item questionnaire.
- Rubric scores for group projects.

b. Qualitative Data:

- Reflection journal entries.
- Student quotes from discussions.
- Parent feedback shared informally.

c. Visual Evidence:

- Charts generated from raw data

By the end of six weeks, I had a multi-layered evidence set: numerical data showing change in attitudes, rubric scores showing skill growth, and authentic student voices demonstrating impact.

4. Observation and Evidence

At the beginning of the project, student responses to the baseline questionnaire revealed a pattern I had anticipated. On a 1–5 scale, most averages fell between 2.5 and 3.0 — sitting in the "neutral" zone. Students did not strongly disagree with statements like "I can apply science to real-world problems" or "I feel responsible for conserving electricity", but neither did they show confidence or conviction.

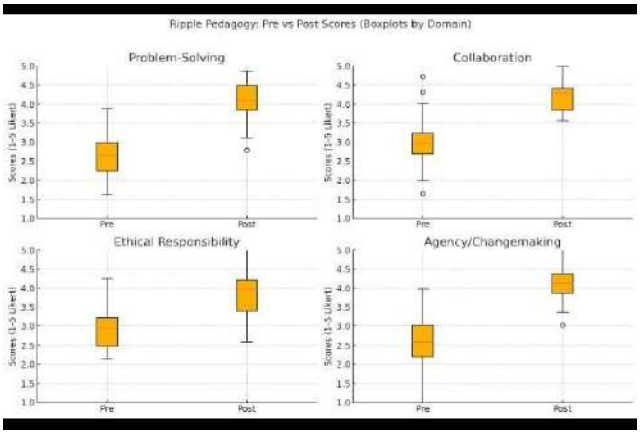
By the end of six weeks, however, the post-questionnaire scores told a different story.

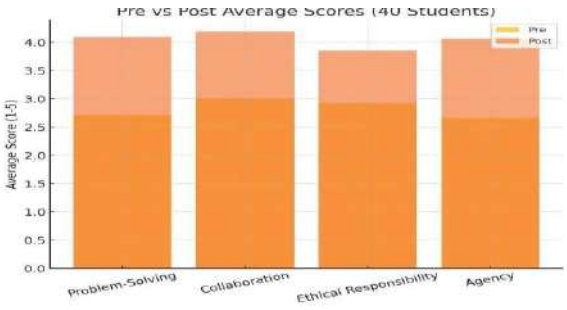
Quantitative Data (40 students, mean scores)

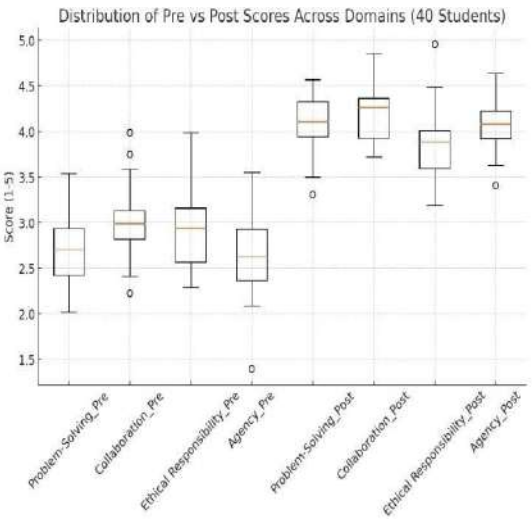
- Problem-Solving: improved from 2.82 (pre) to 4.12 (post).
- Collaboration: improved from 3.05 to 4.18.
- Ethical Responsibility: improved from 2.94 to 3.83.
- Agency/Changemaking: improved from 2.71 to 4.03.

In teacher-friendly terms: students moved from "not sure" to "yes, I can." The highest gain was in problem-solving and agency — they felt more confident in applying knowledge and more willing to lead change.

The rubric scores reinforced this trend. Most groups scored "Proficient" (3) or "Exemplary" (4) in creativity and collaboration. The strongest growth was in applied action (average 3.8/4), as students did not stop at discussions but carried their learning outward through posters, and proposals.







a. *Descriptive Classroom Observations*

Numbers tell only part of the story. The inquiry circles gave me windows into student thinking. I watched as groups huddled over audit sheets, calculators in hand, arguing over whose geyser ran longer or whose fridge consumed more. What struck me was their shift from passive learners to active investigators.

One student, usually quiet, surprised everyone by explaining how leaving devices on standby contributes to phantom loads. Another, who often struggled in theory, became the most enthusiastic auditor, proudly bringing a photo of his family's electricity bill.

Students' reflections in journals gave further evidence. A boy wrote: "I convinced my father to unplug chargers at night. He said the bill reduced a little this month." A girl shared: "Earlier I thought physics was only formulas. Now I see it in my kitchen."

The campaigns they designed created ripples beyond the classroom. Parents reported back informally that their children had become "energy police" at home. One mother said, "My daughter now checks every room before bedtime and scolds us if a fan is left on."

b. Surprises and Setbacks

The journey was not without setbacks. A few students initially copied numbers from peers instead of doing audits sincerely. Some groups had conflicts about division of work. Time pressure near exams meant not every campaign could be executed at scale.

Yet the surprises outweighed the setbacks. A student who rarely spoke in class emerged as the lead actor in the assembly skit. Another, usually indifferent, became the most persuasive in convincing his peers about LED alternatives. I even noticed students voluntarily checking empty classrooms for lights and fans behaviour that was never part of my initial plan.

5. Reflections and Learnings

Looking back on this project, I realise it was as much a journey for me as it was for my students. I began with frustration, watching a high-achieving student ignore the responsibility of switching off a fan, and ended with a renewed belief that education can ripple outward into homes and communities when designed intentionally.

a. What I Learnt About My Students

My students demonstrated qualities that rarely surface during conventional lessons. The same children who usually memorised definitions quietly in the back row became animated investigators, arguing passionately about energy usage. A boy who struggled to complete physics numericals took pride in auditing his family's electricity bill. A shy girl, who rarely spoke in class, stood confidently on stage to perform in the awareness program.

These experiences taught me that when students are trusted as co-researchers, they rise to the occasion. Their sense of ownership and agency grew once they saw how science related directly to their lives.

b. Roadblocks and Failures

This project was not smooth. Several obstacles tested its flow:

- A few students submitted fabricated or incomplete data in the first round. This forced me to address integrity in research directly.
- Group conflicts sometimes consumed more time than planned. Some students felt they were carrying the weight of their teams.
- Time constraints near exams meant we could not scale up campaigns as much as I had hoped.

These failures were not pleasant, but they were valuable. They reminded me that real learning is messy, and that honesty about challenges is as important as celebrating outcomes.

c. What I Would Do Differently Next Time

If I run this project again, I would:

- Integrate digital tools such as Google Forms or Sheets for more reliable data collection.
- Hold a short orientation for parents to build buy-in and reduce hesitation about sharing bills.
- Allow more time for reflection and action, perhaps spreading it across a term rather than six

weeks.

6. Conclusion

This study began with a small but telling incident: a bright student leaving a classroom without switching off the lights and fans. What seemed like a trivial moment became the seed for Ripple Pedagogy, a framework where learning begins in the classroom but ripples outward into families, communities, and society.

The results were clear. Students improved not only in their problem-solving skills but also in their sense of agency, they began to see themselves as capable of taking meaningful action. They collaborated more effectively, reflected more deeply on ethical responsibility, and even influenced their parents' behaviour at home. These outcomes reaffirm the idea that true education is not about marks alone, but about nurturing thoughtful, responsible, and active citizens.

As Aristotle wisely said, "Educating the mind without educating the heart is no education at all." Ripple Pedagogy embodies this truth by integrating the head, heart, and hands of learning. When knowledge, ethics, and action come together, education becomes life itself, echoing John Dewey's belief that "Education is not preparation for life; education is life itself."

FROM CONSUMPTION TO COLLABORATION: FLIPPED CLASSROOM PEDAGOGY WITH DIGITAL STORYBOOKS AND OTHER TOOLS.

Ms. Shilpa Y B

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Sample Size :30

1.Introduction

The flipped classroom approach is a pedagogical mode that reverses a course's traditional lecture and homework components. A flipped class is that which is traditionally done in class is now done at home, and that which is traditionally done as homework is now completed in class. The flipped classroom requires students to watch brief video lectures at home before attending class, while in-class time is dedicated to activities such as exercises, projects, or discussions. The flipped classroom has demonstrated favourable outcomes, including enhancing students' academic performance, motivation, and engagement and promoting social interaction and self-directed learning abilities.

Implementing a flipped classroom mode necessitates significant time and effort for educators, as they must devote considerable resources to instructional videos. Creating original instructional videos is a highly demanding process that often requires an uninterrupted environment. Therefore, the research aims at particular chapters which can align with the important values and learning outcomes to increase students’ performance.

To mitigate issues such as inadequate pre-class preparation and excessive student workload, scholars have incorporated pre-class preparation tasks into the classroom, a practice known as in-class flipping. Ramirez suggested that in-class flipping has six interrelated stations: the flip station, practice station, self-learning station, feedback station, teacher support station, and peer guidance station. This approach has partially resolved the issue of poor pre-class preparation. In this research, attention has been paid to regulate the limitations of the pedagogy and to implement with a positive approach to achieve expected learning outcomes.

2. Rationale

The central classroom problem identified was that Grade 9 English students demonstrated low engagement, passive listening habits, and limited collaboration during traditional instruction. The conventional method did not sufficiently support diverse learners, nor did it promote critical thinking, discussion, or independent exploration of texts. This issue created a learning environment where only a few students participated actively, while many remained as silent observers. Despite well-designed lessons, Grade 9 learners often remain dependent on teacher explanation, resulting in a teacher-driven classroom where students seldom explore content independently.

Apparently, this persistent challenge raised an important question for this research: "Can the learning environment become more active, inclusive, and student-driven if technology-enhanced flipped classroom strategies are introduced?" This curiosity became the trigger for exploring a new pedagogical approach. Watching students lose interest during lengthy teacher explanations, coupled with the increasing availability of digital learning platforms, motivated me to try Flipped Classroom pedagogy as a way to shift the classroom culture from consumption to participation, and from passive listening to active learning.

This Action Research investigates whether the integration of technology can transform the learning space from a teacher-centre model to a student-driven environment characterized by collaboration, dialogue, and shared responsibility for learning. This blended approach is to increase active participation and promote deeper comprehension and higher-order thinking.

3. Intervention Strategy

a. *Objectives of the Intervention*

The intervention was designed with the following objectives:

- To increase active student engagement during Grade 9 English lessons by shifting from teacher-led instruction to student-driven learning.
- To create a more collaborative and interactive classroom environment through structured group tasks and technology-based activities.
- To improve students' comprehension and writing skills by providing pre-class exposure to content and using class time for deeper practice and application.
- To encourage learner autonomy by allowing students to explore videos, digital storybooks, and simulations independently before class.
- To examine students' perceptions of the classroom environment after the implementation of flipped learning compared to traditional teaching.
- To develop a replicable model for integrating digital tools in secondary English classrooms to reduce disengagement and passive learning.

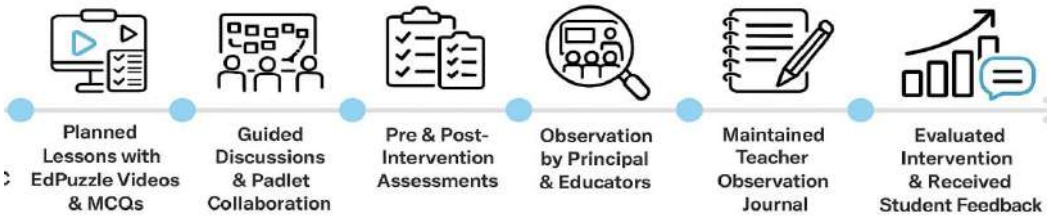
b. *Strategy / Approach Applied:*

The intervention applied was a Flipped Classroom Pedagogy supported by a blended learning with digital tools. The core purpose of the strategy was to shift instructional time from teacher-led explanation to student-driven exploration, collaboration, and application during class. Pre-class learning materials means in-class learning materials were delivered through videos, short films, digital

storybooks, and simulations, enabling students to arrive with baseline understanding and use classroom time for deeper engagement.

c. How did I implement the Pedagogy?

After the submission of abstract, Teacher formally initiated the study by seeking consent from the Principal, parents, and students, and selected Grade 9 C as the sample group.



Each lesson concluded with an exit ticket to capture immediate learning outcomes, and students also provided feedback on the teaching methodology, enabling a holistic evaluation of the intervention's impact.

4. Planning and Implementation

The intervention was planned as a four-week cycle integrated into the regular Grade 9 English teaching schedule. Implementation was structured in three phases:

a. Pre-Class/In-Class (Individual Learning Phase):

Pre-Assessment was conducted before intervention.

Students accessed learning materials before/in the class through Edpuzzle, MS Teams, and teacher-sharedlinks.

b. Resources included:

- Instructional videos.
- Short movie clips related to theme or setting.
- Digital storybooks for visualization.
- Interactive simulations.
- Edpuzzle was used to embed in-video MCQs to ensure accountability.

c. In-Class (Collaborative Learning Phase):

The classroom routine was restructured as follows:

- Quick recap / Introduction of the Topic/ Video embedded with guiding questions to the topic.
- Collaborative Activities.
- Hands-on interactive tasks using Padlet walls.
- Peer review and feedback rounds during writing sessions.
- Exit tickets to check understanding.

The teacher acted mainly as a facilitator, guiding groups, prompting discussion, and tracking engagement.

d. Post-Class (Reflection and Consolidation Phase):

- Students completed short reflections/Post-Assessment
- Feedback was provided through MS Teams Forms and classroom interactions.

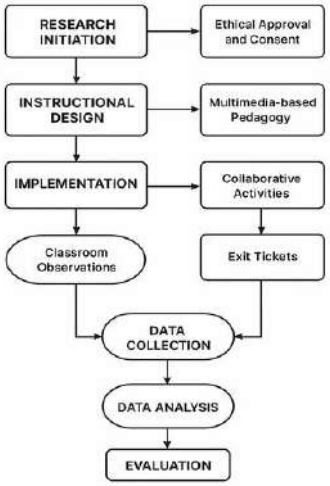
5. Tools, Platforms, and Activities Used:

The intervention integrated multiple digital and collaborative tools:

- Edpuzzle –In-Class video lessons with embedded questions
- Padlet – Brainstorming walls, visual mind maps
- MS Forms – Surveys, exit tickets, comprehension responses
- MS Teams – Resource sharing, discussion threads
- Mindspark for Grammar Learning Assessment

6. Duration and Frequency

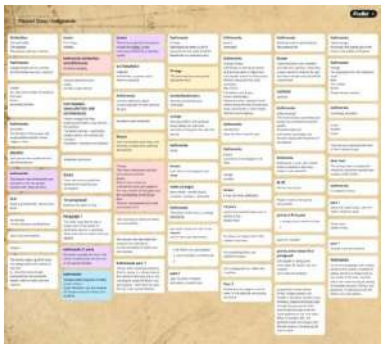
- Total duration: 4 weeks
- Flipped cycle repetition: Each week followed a repeatable structure of
    - 2–3 pre-class tasks/post-intervention assessment.
    - 2 in-class collaborative sessions.
    - 1 post-class consolidation activity.



7. Evidence / Data Collected

To assess the impact of the intervention on student engagement and perceptions, multiple data sources were collected:

- Observation notes by the teacher (engagement levels, group participation, student behaviour)
- Student work samples (exit tickets, group tasks, Activity, Padlet screenshots)
- Pre- and post-surveys on classroom environment perception
- Edpuzzle analytics (video completion, accuracy of MCQs)
- Student reflection logs (Video, feedback forms)
- Classroom photographs for documenting collaborative work
- Class observation Records by fellow teachers.



8. Observation and Evidence

During the four-week intervention, several trends became evident through teacher observations, student work samples, Edpuzzle analytics, exit tickets, and classroom interaction patterns.

a. *Student Engagement and Classroom Behaviour*

- Participation levels increased noticeably during collaborative tasks. Students who were typically silent during traditional lessons began contributing more actively during group discussions.
- Padlet boards filled quickly, indicating that students enjoyed expressing ideas visually and collaboratively.

b. *Student Responses (Summary of Reactions)*

- Many students expressed that in-class videos made concepts easier to understand, allowing them to "visualize and understand better."
- Students shared comments like:
  "Ma'am, the video made the chapter feel like a movie." — S.A.
  "The Padlet activity helped me understand what others were thinking." — K.R.
- A few students preferred traditional explanations at first but gradually adapted to the flipped model.

c. *Surprises Noticed*

- Students who rarely interacted socially became more participative when given shared digital spaces like Padlet.
- Edpuzzle analytics revealed that some students watched videos multiple times, indicating self-paced learning—something not possible in traditional lessons.

d. Challenges Faced

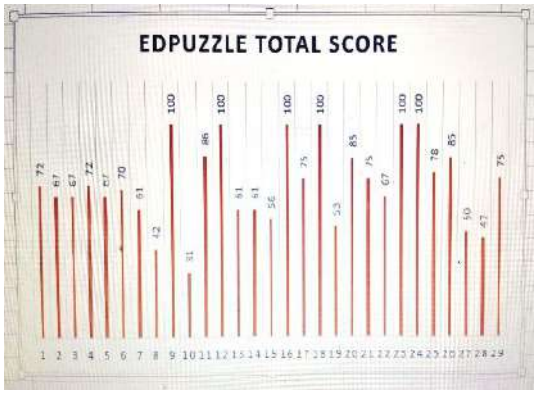
- Time management during group work was sometimes difficult; groups occasionally became too absorbed in discussion.
- Availability of Computer Lab at school occasionally slowed down Padlet or Edpuzzle activities.
- Ensuring equal participation in groups required consistent teacher facilitation.

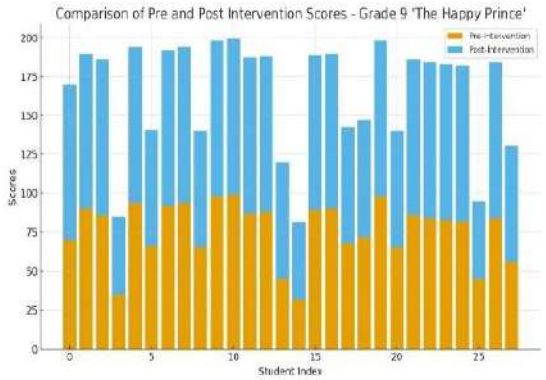
9. Reference Materials & Data Evidence

Student	Pre	Post	Gain
4	35	50	+15
15	32	50	+18
26	45	50	+5
28	56	75	+19

Statistic	Pre-Intervention Score	Post-Intervention Score
Minimum Score	58	66
Maximum Score	98	100
Range	40	34

- Central Tendency Shift: Both the mean and the median show a substantial shift upwards, indicating that the intervention generally improved performance across the class. The median post-intervention score of 95 suggests that half of the students scored 95 or above.
- Mode Dominance: The Mode in the Post-Intervention data is 100, which is observed 7 times.





This suggests a clustering of high scores after the intervention.

a. *Summary of Key Trends*

- Engagement increased: More students contributed in discussions compared to the start of the study.
- Students' perception of classroom environment shifted positively in post-survey responses, particularly in areas of collaboration and inclusiveness.
- Teacher guidance reduced during later weeks as students became more self-reliant.
- Overall, the graph powerfully reinforces the finding that the intervention was successful in increasing scores across the entire group.

10. Reflection & Learnings

a. *Insights about Students*

- Students learn more deeply when they take ownership of content before the lesson.
- Collaborative digital tools give quiet or shy learners a voice, making participation more equitable.
- Self-paced videos significantly help mixed-ability learners, especially those who need repetition or visual support.

b. *Insights about Teaching*

- The role of the teacher shifts from an instructor to a facilitator, guide, and observer.
- Carefully curated pre-class materials help maximize the quality of in-class time.
- Clear instructions and predictable routines are essential for maintaining structure during collaborative tasks.

c. *What I Might Do Differently Next Time?*

- Provide a video-viewing checklist and set deadlines to ensure more consistent pre-class completion.
- Introduce student roles (timekeeper, scribe, presenter & motivator) to enhance group accountability.
- Offer multiple video lengths (short, medium, extended) so students can choose based on their

learning preference.

- Integrate more digital storybooks and interactive grammar simulations to cater to diverse learning styles.

d. Reflection Using Evidence

- Photos of Padlet boards showed increasing complexity week-by-week—evidence of richer thinking.
- Observation notes documented improved confidence in students who earlier hesitated to respond.

11. Relevance to Other Educators

This study is highly relevant to English teachers and educators across subjects because:

- Many classrooms face similar issues—passive learners, teacher-dominated interaction, uneven participation.
- The intervention demonstrates a practical, manageable, and scalable model for introducing flipped learning in any secondary classroom.
- Digital tools like Edpuzzle, Padlet, MindSpark, and MS Forms are easy to adopt and require minimal setup, even for teachers new to technology.
- The findings show how in-class collaboration can transform classroom culture, making learning more student-centered.
- Educators can replicate or modify this model to suit their context, curriculum, or subject area.

This research reinforces the idea that technology is not a replacement for good teaching, but when blended thoughtfully, it enhances student engagement and deepens learning.

HOW DO UNPLUGGED AI ACTIVITIES IMPROVE COMPUTATIONAL THINKING IN STUDENTS?

Ms. Sneha Umbarkar

Dr. Kalmadi Shamarao High School

Sample Size: 80

1. Introduction & Rationale

During classroom discussions on AI applications such as face unlock and photo tagging, I observed that students were familiar with using these tools but could not explain how they worked. This became especially clear when students confidently identified AI examples but struggled to describe processes like data training, feature recognition or machine decision making. Their misconceptions showed that despite exposure to AI in everyday life, the underlying concepts remained abstract and difficult to grasp. This became the trigger for exploring a more accessible way to teach AI concepts meaningfully rather than just introducing them as futuristic ideas.

To address this learning gap, I first introduced an unplugged face recognition activity, where students acted out the steps of feature extraction, pattern matching, and classification. This hands-on approach helped simplify complex AI concepts and build foundational understanding. Building on their curiosity, students then used Machine Learning for Kids and Scratch programming to train datasets and create AI-based projects.

This progression—from unplugged activity to real machine learning—enabled students to understand not only *what* AI does, but *how* machine learning models work, improve and make decisions. Addressing this mattered because it supported deeper computational thinking, strengthened conceptual understanding and helped students transition from passive technology users to informed and empowered creators.

2. Intervention Strategy

The intervention was designed as a two-stage instructional sequence combining unplugged learning with digital machine learning tools. The approach was implemented over six sessions (three weeks) and intentionally scaffolded so that conceptual understanding developed before technical application.

a. Phase 1: Concept Building through Unplugged Learning

Duration: 2 sessions (30 minutes each)

Method: collaborative, movement-based learning (no computers)

Tools: printed images, student-generated questionnaires, 0/1 scoring grid

- Students first analysed fictional Disney character images to identify key visual features such as colour, patterns, and distinguishing characteristics.
- In groups, they created yes/no feature-based questionnaires and used binary scoring to determine matches.
- The same structure was repeated with real student photographs to increase complexity and accuracy challenges.

This unplugged facial recognition activity introduced computational thinking concepts—feature extraction, pattern recognition, decomposition, and data-driven decision-making.

Click here: - Supporting Evidence: Images & Demonstration

b. Phase 2: Applying Concepts Using AI Tools

Duration: 4 sessions (45 minutes each)

Method: Guided hands-on machine learning and coding

Tools: *Machine Learning for Kids*, Scratch 3.0, labelled datasets

Using the conceptual foundation from Phase 1, Grade 7 students created the BookLens: AI Edition project. The process included:

- Dataset Creation: Students collected book cover images and labelled them by *genre* and *condition (good/damaged)*.
- Model Training: Using *Machine Learning for Kids*, students trained an image recognition model and iteratively improved its accuracy through repeated testing.
- Integration with Scratch: Students connected the trained model to a Scratch program and wrote conditional logic to allow the AI to make predictions from live camera input.
- Testing and Debugging: Students evaluated false positives/negatives and refined images, labels, or block-based logic accordingly.

BookLens: AI Edition *(Video of the project how it works)*

Project Code

3. Evidence Collected

- Teacher observation notes
- Student worksheets and labelled datasets
- Screenshots of model training attempts
- Scratch project files and output logs
- Informal verbal reflections during testing

4. Innovation

The innovation in this strategy lies in the intentional bridge between unplugged simulation and real AI modelling. Instead of students coding first and understanding later, the sequence reversed the process: students *experienced* machine learning logic physically before applying it digitally. This helped reduce cognitive load and made complex AI concepts developmentally appropriate.

Evidence Type	**Description of What Happened**	**Example / Artifact (Anonymised)**	**Link to Learning Outcome**
Digital Work Sample (Model Training & Scratch Code)	Students refined datasets and improved accuracy through multiple iterations. Early models scored 40–55% accuracy but later increased to 80–90% after re-labelling and retesting.	Screenshot of training log and Scratch conditional blocks (collected with parental consent).	Demonstrates understanding of pattern recognition, abstraction and iterative problem solving, key components of computational thinking.
Student Reflections (Quotes: anonymised)	Students shifted from thinking AI is automatic to understanding training, errors, and dataset quality.	-Student A: "I thought computers just know things. Now I see they learn from mistakes like we do." - Student B: "We changed the labels and then the AI became smarter." -Student C: "The unplugged activity helped because we already knew how to find features."	Shows conceptual transfer from unplugged activity to real AI tools, indicating deeper comprehension of machine learning.
Behaviour Observation Notes	Students collaborated heavily during unplugged activities but initially worked individually during digital coding—collaboration returned once they encountered debugging challenges.	Teacher log notes: "Group discussion increased when accuracy stalled—students compared images and debated which labels were unclear."	Indicates growing metacognitive reasoning, collaboration, and persistence in debugging processes.
Challenge Patterns Noticed	Students struggled most with consistent labelling and conditional logic in Scratch. Many blamed the computer before recognising dataset flaws.	Example: A student-run model misclassified multiple book covers; students later discovered inconsistent labels such as "Fantasy" vs. "Fantasy Book."	Shows development of algorithmic thinking and error analysis, critical skills in computational thinking frameworks.

5. Reflection & Learnings

a. *Student Learning Insight:*

Students initially assumed AI was automatic and always correct. Through unplugged activities and repeated model training, they realised that data quality, clear labelling and logic affect prediction accuracy. One student commented: *"We thought the AI was wrong, but fixing the labels fixed the answer,"* showing deeper understanding of how AI learns.

b. *Teaching Practice Insight:*

Sequencing the learning—starting unplugged and then moving into digital tools—reduced confusion and increased confidence. However, collaboration decreased during the digital phase and only returned during debugging.

c. *Next Step for Improvement:*

Next time, I will:

Introduce a short lesson on consistent labelling before dataset creation.Add structured collaboration roles/checkpoints to maintain teamwork throughout the activity, not just during troubleshooting.

6. Relevance to Educators

This study demonstrates that AI concepts can be meaningfully introduced even at the middle school level when learning is scaffolded through unplugged activities before moving into digital tools. Other educators can adapt this sequence in different subjects by first helping students understand the logic or process behind a technology physically, before transitioning into coding or tool-based environments. This approach reduces cognitive load, builds confidence and helps students make sense of abstract concepts such as pattern recognition, classification, and algorithmic decision-making.

- **Science**: Start with hands-on sorting/classification, then move to AI tools for species or weather identification.
- **Language**: Use sentence or tone sorting unplugged, then apply sentiment or tone analysis using AI.
- **Math**: Begin with pattern or number sorting activities, then connect to AI-based recognition or classification tools.

7. Core Insight:

Unplugged → AI tool progression makes learning AI clearer, engaging, and transferable across subjects.

8. Reference Materials

The following resources supported instruction and student learning:

- Feature Identification Worksheet + Images (Unplugged Activity)

- Book Lens Dataset Labelling Sheet
- Machine Learning for Kids Training Log + Scratch Code Screenshot

These materials helped support learning from unplugged reasoning to digital AI modelling.

9. Data Collected

Evidence included:

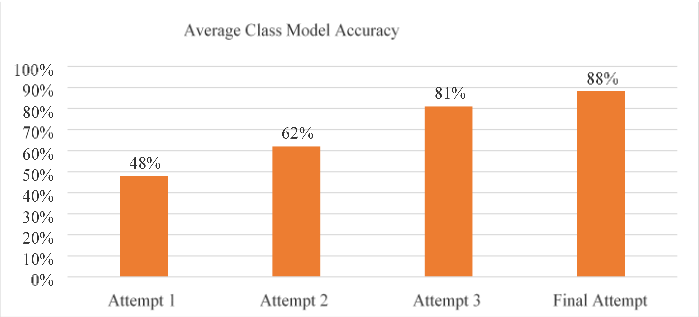
Annotated worksheets	Scratch output screenshots
ML model training logs	Scratch output screenshots
Observation notes	Student reflection slips

Example anonymised student quote:

"After we fixed the labels, accuracy improved from 48% to 88%."

Pattern	Evidence	Insight
Accuracy improved across attempts	ML logs	Students learned the value of refining datasets.
Shift in mindset	Student reflections	Students understood AI as trained, not automatic.
Increased collaboration	Observation notes	Collaboration strengthened during debugging.

10. Model Accuracy Over Attempts



11. Conclusion

This research showed that students can progress from using AI to creating it through a scaffolded unplugged-to-digital approach.

DEVELOPING DIVISION CONCEPTS THROUGH A WATCH–TOUCH– LEARN COMPUTATIONAL THINKING MODEL

Ms. Snehal Rohan Bhumkar

Dr. Kalmadi Shamarao High School

Sample Size: 16

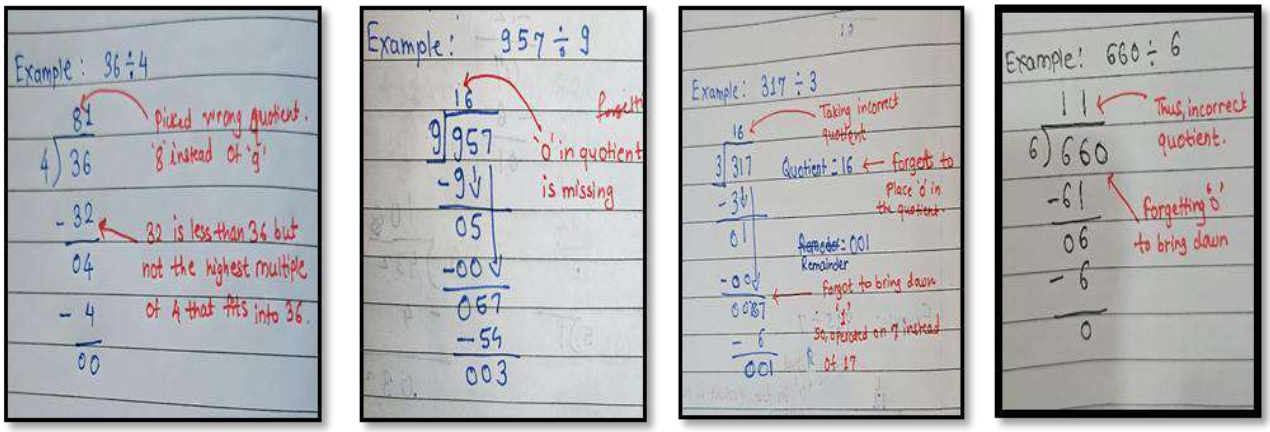
1. Introduction

Objective: To visualize the operation of division using hands on activity while integrating computational thinking skills under math education.

Division is often the most challenging arithmetic operation for young learners, with long division posing particular difficulty due to its numerous procedural rules and limited emphasis on underlying concepts. In primary classrooms, division is typically introduced as repeated subtraction, yet students rarely develop a clear understanding of why the process works. As a result, procedural rules tend to overshadow conceptual insight, leading to persistent misconceptions and errors that continue into later grades and more advanced topics such as decimal division. In response to these challenges, and informed by discussions with colleagues, a computational thinking–based, hands-on activity was designed to help students visualize the division process and develop a deeper, more accurate conceptual understanding.

2. Rationale

Students of Grade V followed the steps of division—divide, multiply, subtract, and bring down—while performing the operation.



At the primary level, an exclusive focus on rule-based division tends to produce a fragile conceptual foundation and leads to persistent errors.

The following recurring errors were observed:

- Misalignment of the digits in the quotient.
- Weak understanding of place value relationships.
- Selection of an incorrect subtrahend during each subtraction step.
- Skipping or incorrectly executing the "bring down" step.
- Ignoring, misinterpreting, or incompletely using the remainder.
- Incorrect placement of zeroes in the quotient and confusion about how to handle a final zero in the dividend.
- Failing to ensure that the remainder after each subtraction step is always less than the divisor.
- Overlooking the need to check the accuracy of the quotient by marking or ticking each digit of the dividend as the process progresses from left to right.

3. Intervention Strategy

A computational thinking–oriented approach was adopted to structure the activity. The sample consisted of 16 students with mixed abilities, ranging from remedial to high-ability learners, drawn from Grade V. The intervention was carried out in the mathematics laboratory, conducted twice in a term with an interval of approximately five months. The total duration allotted for each session was one hour.

Step I: Introduction to division through concept of equal grouping

To build a visual and conceptual understanding of division, a hands-on method inspired by Montessori principles was employed. The idea of distributing a quantity into equal groups was demonstrated using the example ***115 ÷ 5***. Place-value understanding was reinforced through the use of coloured coins or beads to represent numerical values concretely. This approach ensured that the concept was made visible and meaningful through direct manipulation of materials.

RED -1 hundred	Yellow-1Ten	Green-1 unit
H	T	U

Low cost and easily available materials like beans / pebbles / coloured chits of paper can also be used.

Step II: Decomposition (Breaking Down the number)

The number 115 was decomposed into smaller, manageable parts for division by expressing it in expanded form and representing each part with coded coins. Students recorded the expanded form of the number as:

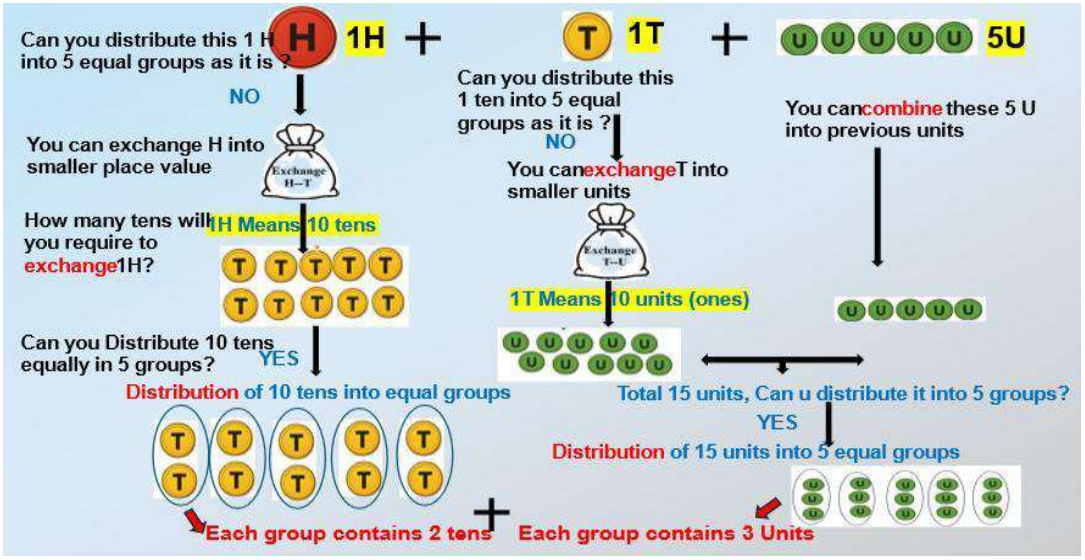
1 H	+ 1 T	+ 5 U
H	T	U U U U U

Step III: Pattern Recognition (Identifying Commonalities in Division)

Students were encouraged to observe patterns while breaking a larger number into smaller, equal groups. To facilitate this, prompts were provided—such as exchanging one red coin (100) for ten yellow coins, or one yellow coin (10) for ten green coins—using a playful "Exchange Bank." Through this mechanism, students practiced converting higher place-value coins (hundreds to tens, tens to ones) to simplify the distribution process.

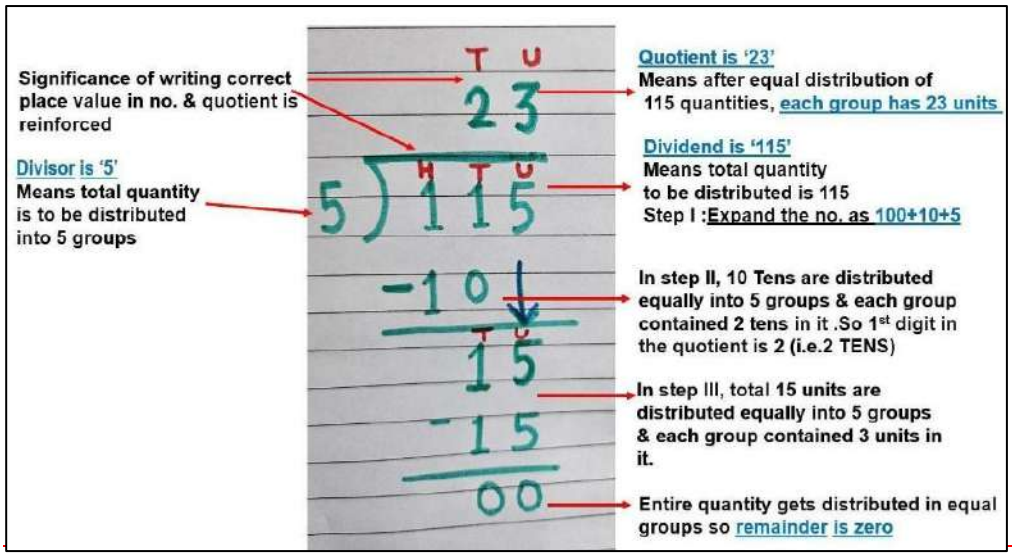
Returning to the example, students identified the divisor as 5 and understood that the total value of 115 needed to be shared equally among five groups.

With timely guiding questions from the teacher, students carried out the division process, recognized the exchange patterns, and proceeded with distribution and grouping accordingly.



Step IV: Abstraction (Relating to the Long Division Method)

Students expressed curiosity about connecting the hands-on strategy to the long division method. The teacher supported this transition by guiding them through the standard algorithm while explicitly highlighting how each step corresponded to the earlier activity. This stage functioned as a critical phase of abstraction, enabling students to move from concrete manipulation to symbolic representation.



Iteration: What if number is not divisible completely and leaves remainder?

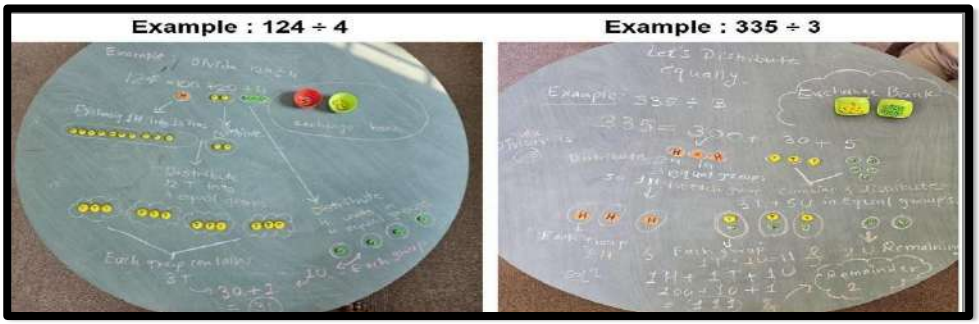
In the next phase, students applied the same strategy to a new division problem where the number could not be distributed equally, resulting in a remainder. With guided support, students revisited the hands-on model and visualized how and why a remainder appears when equal groups cannot be formed. Working collaboratively in teams, students discussed, experimented, and refined their understanding, gradually connecting the concrete experience to symbolic notation.

4. Observation and Evidence

This activity was executed in two phases—initially in the first semester and again after a gap five months with the same group. The repeated exposure provided insight into concept retention, transfer of learning, and cognitive development over time.

a. Exploration in math lab

Two students independently explored the concept of division through self-created examples, observed emerging patterns, and one of them thoughtfully modified their approach to develop a more efficient method demonstrating computational thinking and problem-solving ability."



Video link: students solving the problem

https://drive.google.com/file/d/1AT9VVjywcFP1xdUKD4KNtmb8XE9aWJEI/view?usp
https://drive.google.com/file/d/1ckVi17Kvom1jnxuj2xfd7n8MyB2BbIVX/view?usp

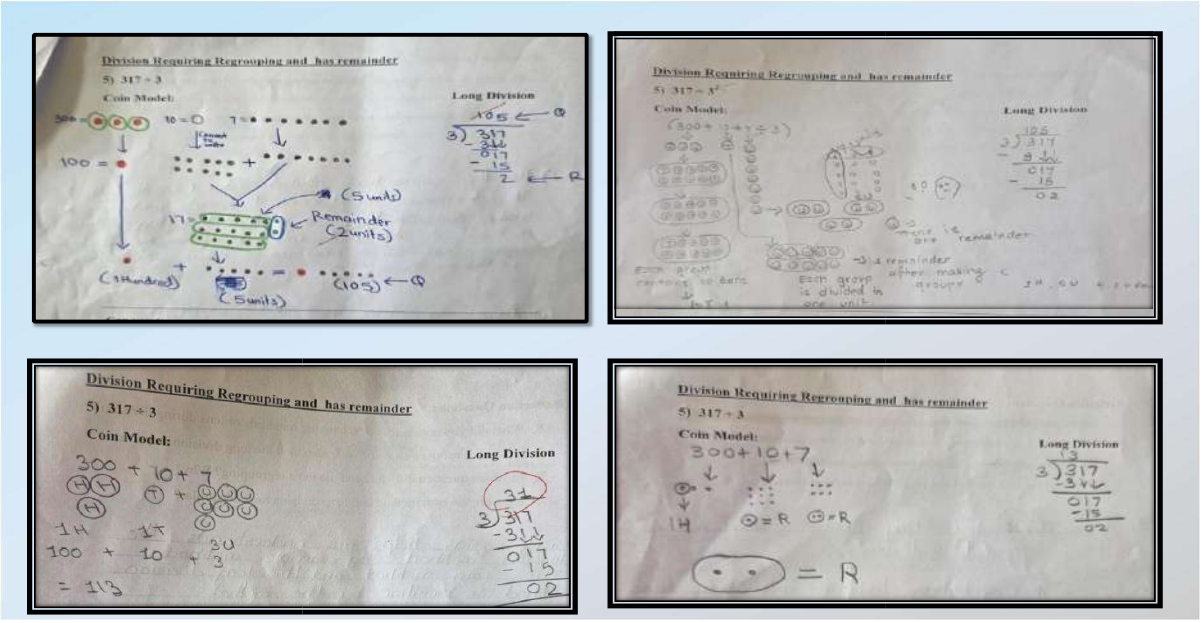
To our surprise student wrote flow of computational thinking process in division operation.

b. Revisiting the Concept After 6 Months: Checking Retention and Understanding

After a gap of 5–6 months, the activity was repeated to assess retention and conceptual understanding. This time, students first revisited division through manipulatives and hands-on exploration. Once the concrete process was reinforced, they completed a worksheet that included problems requiring both the hands-on division strategy and the long division method. This approach allowed comparison of procedural fluency and conceptual understanding.

Sample worksheet is shared on drive:-https://drive.google.com/drive/folders/1HaDfKkpTE4Gx9WifZHSMsE9SXZLNTa0I?usp=drive_link

Students work- Pictures of one solved example of students with different abilities.



5. Observation Notes:

a. Engagement and Response

Most students showed high engagement during the activity. The concrete representation appeared to reduce anxiety often associated with division and made the operation feel accessible and meaningful. Students expressed that the method helped them "see" how division works rather than simply

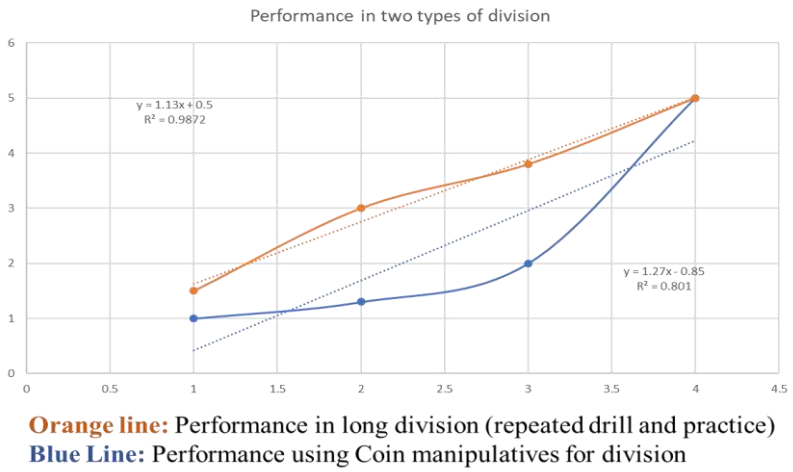
memorizing steps. This aligns with constructivist pedagogical principles, where learning occurs through experience and interaction rather than passive reception.

b. Performance Patterns

Clear performance distinctions were observed among learners:

- **High-performing students** demonstrated strong retention and required minimal facilitator intervention. They were able to transfer learning from the hands-on model to symbolic long division efficiently and visualized regrouping steps independently. These students could also apply the process to variation-based problems, suggesting the development of procedural fluency supported by conceptual understanding.
- **Average-performing students** also successfully completed the activity but needed prompts during regrouping or abstraction stages. With guided questioning, they were able to make connections between the manipulative model and written division. This suggests they were transitioning from concrete to representational understanding.
- **Learners who typically struggle with mathematics** showed mixed responses. While they could execute the hands-on steps correctly and demonstrated conceptual understanding during manipulation, they experienced significant difficulty transferring this understanding onto paper. The gap between doing and explaining was more pronounced in this group. Some were able to understand grouping and distribution but could not reliably translate the process into a quotient. Students at the lower end of the performance spectrum found the activity engaging but still could not articulate the process in symbolic form.

6. Data Evidence



***Graph 1**: Each data point from Left to right on the graph above shows the average performance for a cluster of students ranging in ability from Remedial (extreme left) to below average (but not failing), average students, and, the high ability students (converging on the top right)*

a. Reference Materials & Data Evidence:

Photos of students' work, worksheet sample, flowchart is attached and is shared on drive.

https://drive.google.com/drive/folders/1HaDfKkpTE4Gx9WifZHSMsE9SXZLNTa0I?usp=drive_link

7. Reflection and Learnings

- Concrete experiences supported comprehension, especially for learners who rely on visual, kinaesthetic, or tactile modalities.
- The activity helped students identify the meaning and function of regrouping—not merely as a step to memorize but as a logical necessity arising from unequal distribution.
- The ability to transfer learning from materials to written algorithm varied based on existing mathematical fluency and confidence levels.
- Repetition over time reinforced conceptual understanding, particularly for mid-range learners.
- Some students require an intermediate representational scaffolding (pictures, place value charts, or structured worksheets) before fully transitioning to symbolic abstraction.

a. *Students' Reflection:*

"This activity helped me see division both visually and logically. It felt like solving a puzzle. I now understand that this process is an example of computational thinking, because we broke the problem into smaller parts, followed a pattern, and tried again when something didn't work. The whole experience was engaging and meaningful." Said by Ira.

8. Implications for Improvement

Based on these observations, the next step is to incorporate more structured bridging strategies— such as visual supports, step-by-step anchor charts, repeated guided practice, and gradual removal of manipulatives. Providing opportunities for verbal explanation, peer modelling, and low-stakes repetition may further strengthen the transition from concrete to symbolic representation.

9. Relevance to educators

- The study supports CRA sequence—Concrete → Representational → Abstract—to build strong division understanding. Computational thinking helps to simplify the process.
- Manipulatives make thinking visible and uncover misunderstandings hidden in traditional long division.
- Introducing hands-on division strategies in Grades 3–4 builds early conceptual foundations.
- With regular practice and spaced revision, students develop confidence, retain procedures, and transition smoothly to symbolic methods.
- The intention of this instructional approach extends beyond accuracy. The focus is on making the division process visible, allowing learners to internalize the logic behind each step. When students understand *how* division works rather than just *what* the answer is, they develop the ability to identify misconceptions and self-correct with confidence.

10. Conclusion

Hands-on learning, if introduced early and reinforced over time, can transform division from a memorized procedure into an understood and retained mathematical process.

AMPLIFYING UNDERSTANDING: AN EXPERIENTIAL APPROACH TO THE PROPERTIES OF SOUND

Ms. Priya Narasimhan, Ms. Jayashree Krsna and Ms. Tripura Balaji

Padma Seshadri Bala Bhavan Senior Secondary School

Sample Size: 128

1. A Ripple in the Silence: How the Story Began

It had been four years since digital boards disappeared from our classrooms postpandemic. Students had grown accustomed to screens, animations, and interactive visuals—but now, the chalkboard stood alone. When I introduced the chapter

'Properties of Sound' I noticed blank faces. Sound was everywhere around them, yet the concept seemed invisible—almost untouchable.

The turning point was the diagnostic test conducted in first week of October. Only 22% of students could answer 40% of basic MCQs on sound. It wasn't a lack of intelligence. It was a lack of connection.

And so, what began as a challenge grew into a quest—to bring sound back into the classroom not as a chapter, but as an experience. A journey of listening, feeling, exploring, experimenting, and discovering. This research paper is the story of how sound found its voice again.

2. Rationale: Why This Study Matters

Teaching sound without sound is like teaching colour without light. After the pandemic, our classrooms lacked digital support systems that once brought invisible concepts to life. Teachers felt the strain, and students felt the gap.

Three learning gaps clearly emerged from the diagnostic test conducted by ASSET in August 2025 and highlighted in the teacher report book:

- Advanced or complex date representation or interpretation.
- Integration of different concepts or information for decision making.
- Recollection or recognizing of scientific facts and concepts.

These gaps revealed something deeper: students needed experiences—not just explanations.

Thus, the rationale behind this study was born:

To explore whether 'Experiential Learning', rooted in Multiple Intelligences could make an invisible concept touchable, visible, memorable, and meaningful.

Also, the study offered scope for multi-disciplinary approach including co-curricular subjects like Indian music and arts for which students are graded.

3. Action: How the Classroom Turned into a Sound Lab

a. *Designing the Experiential Learning Blueprint*

We crafted a multisensory learning plan that treated the classroom not as a place of listening, but as a place of doing, moving, creating, and questioning.

The learning outcomes were designed to ensure students could:

- Understand the properties of sound
- Analyze sound in real-life situations
- Demonstrate sound concepts through experiments
- Create their own musical instruments or sound-based toys

Each of these outcomes was mapped to a specific intelligence—ensuring no learner felt left out.

b. *Experiential Strategies: Learning Through All Senses*

- Visual-Spatial Intelligence: Students decoded sound wave diagrams, compared amplitude visuals, and annotated crests and troughs.
- Logical-Mathematical Intelligence: Students solved frequency and time period problems, connecting numbers to real vibrations.
- Bodily-Kinesthetic Intelligence: They became waves—forming human chains that moved as transverse and longitudinal waves.
- Musical Intelligence: The highlight—Battle of Bands. Students crafted instruments from boxes, bottles, and strings, brought musical instruments and explained sound concepts through music. They even composed own lyrics, some scientifical too, thus bringing out the budding authors and poets.
- Verbal-Linguistic Intelligence: Think–Pair–Share allowed them to articulate scientific ideas clearly.
- Interpersonal Intelligence: Partner experiments on tuning forks and resonance fostered collaboration.
- Intrapersonal Intelligence: The 3–2–1 reflection offered personal insights and anchored learning.

Each intelligence thus became a doorway to understanding.

c. *Assessments and Tools as Learning Touchpoints*

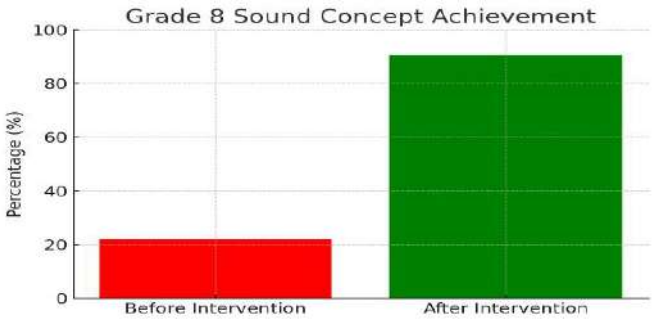
Assessment wasn't just a score—it became a mirror of learning.

We used:

- Diagnostic MCQs (baseline)

- ASSET-based practice
- Case-based worksheets
- Lab demonstrations
- Peer teaching rounds
- Exit tickets
- Poll-based instant quizzes

The post-test revealed a remarkable 90.6% average—a leap that reflected deep, joyful learning.



3. Observations and Evidence: When Learning Became Alive

The classroom's energy transformed. Students leaned forward, argued scientifically, repeated demonstrations to verify results, and explained concepts using their own analogies. The misconceptions and gaps diagnosed were addressed and students have gained clarity and understanding of concepts.

Unexpected observations:

- Quiet students became leaders during music-based activities.
- The word 'frequency' stopped being scary once students felt vibrations.
- Peer-to-peer clarification happened naturally, without prompting.

Evidence collected: included worksheets, videos, photos of instrument-making, quiz scores and student reflections.

Google Drive Folder Link for Evidence of Teaching-Learning Process:
https://drive.google.com/drive/folders/1vVxEmN18psRfYtH1Wx0ssv5QHXLSvKnA?usp=s haring

4. Reflections:

This research reaffirmed a simple truth - students learn best when they experience learning, not when they listen to it.

Indian Knowledge System: Traditions - Ringing temple bells, blowing conch shells (shankh) paved way for students to reflect.

a. *My biggest realizations:*

- Experiential learning dissolves fear—replacing it with curiosity.

- When students create, they remember.
- Happiness in classrooms is not a luxury—it is a learning catalyst.
- Added as an interdisciplinary project blending Art, Maths, English and music.

b. In future, what I could include as part of teaching-learning process:

- Encourage students to design sound experiments for younger grades.
- Integrate community elements—inviting parents or local musicians.

This journey changed my students—but it also changed me.

5. Why It Matters Beyond My Classroom

- Every subject has the potential to be experiential.
- Mathematics can be felt through patterns, Social Science through role-plays, Languages through storytelling, and Chemistry through kitchen experiments.
- The approach in this study is simple, scalable, and low-cost—making it accessible for any teacher in any school.
- When classrooms transform into laboratories of experience, learning becomes not just effective—but unforgettable.
- Teaches students about **ELVES** needed for one's life lessons:
    - **E(Emotional):** Sounds around us- nature sounds like falling water, wind gushing, birds chirping are to be enjoyed to get mental relaxation.
    - **L (Life skills):** To learn basic sign language for communication, coping up with stress and emotions through music and different rhythmic sounds.
    - **V(Values):** Empty vessels make much noise (only loud talking does not mean or prove anything)
    - **E(Environmental):** To be aware of noise pollution and educate public, neighbours etc. to respect and follow rules related to playing loud music, bursting crackers, following no honking policy near hospital zones etc.
    - **S (Social Awareness)**: To care for the hearing impaired and try ways to interact with them through digital media, stage mime events etc.

ENHANCING SCIENCE UNDERSTANDING THROUGH ROLEPLAY AND STUDENT CREATED SYMBOLIC REPRESENTATIONS

Ms. Aleenjeet Jaggal

O P Jindal Modern School

Sample Size: 38

1. Introduction and Rationale

Teaching science to Class 6 students revealed a consistent challenge as this is a new subject to them. Learners could repeat definitions but always struggle when asked to explain why or how scientific processes occur. This became clearer during a lesson 'Journey through states of water', where students confidently listed stages yet could not connect them to real-life examples. Their learning appeared memorized rather than understood.

This triggered my curiosity to try something different to make them understand the concept. I noticed that whenever students acted out a concept or created their own symbols to represent an idea, their explanations became clearer and more logical. These small classroom moments suggested that active, creative engagement could help students move beyond rote recall.

This observation is motivated and supported by research showing that dramatization and student-generated representations deepen understanding—I decided to explore whether combining role play and student-created symbols could make abstract science concepts more meaningful, concrete, and memorable for learners.

2. Intervention Strategy

To address the difficulty students faced in understanding abstract scientific processes, I implemented a combined strategy of role play and student-created symbols in Class 6 science lessons. The approach

was grounded in the belief that students construct deeper understanding when they actively model processes and generate their own meaningful representations.

a. Planning and Implementation:

The intervention was planned across a four-week unit covering different topics. For each topic, lessons were redesigned to include:

- **Role Play Segments**: Students worked in small groups to dramatize scientific processes. For example, during the water cycle lesson, students acted as "evaporation," "clouds," or "precipitation," moving across different stations. During the life cycle topic, groups modeled different stages using short skits.
- **Student-Created Symbols**: After each enactment activity, learners designed their own symbols, or simple diagrams to explain the same process. These symbols had to be logical, labelled, and accompanied by brief written explanations.

b. Tools and Activities Used:

To support the activities, I used:

A4 papers, markers, colors, Simple props made from daily life materials (soil, earthen pots), Video clips as initial triggers for conceptual understanding, Group discussion prompts and reflective notebooks. The activities followed a cycle of demonstrate → dramatize → design → explain, which allowed students to revisit the concept in multiple ways.

c. Duration of the Intervention:

The strategy was applied over:

- 1 full unit (four weeks)
- 4 concept-based lessons where role play was used
- 4 symbol-creation tasks, one after each dramatization

This duration allowed me to observe patterns in understanding and retention across several topics rather than in a single lesson.

d. Evidence and Data Collected:

Multiple sources of classroom evidence were gathered to better understand the effects of the approach:

- Teacher observation notes on engagement, participation, and conceptual clarity
- Student work samples, including symbols, diagrams, and written explanations
- Short formative assessments after each lesson
- Exit slips with student reflections
- A final student feedback survey on the helpfulness of role play and symbol-making

3. Observation and Evidence

Across the four-week intervention, several patterns became visible. Students demonstrated noticeably higher engagement during role-play activities, often volunteering eagerly and recalling steps of scientific processes with greater clarity in subsequent classes. Observation notes indicated that even

typically hesitant learners participated more actively when concepts were dramatized, supporting research that role play increases motivation and confidence in science classrooms.

A similar trend was observed with student-created symbols. When learners designed their own visual or functional representations, they were able to articulate their reasoning better and link the abstract idea to a concrete model—consistent with findings from visual literacy and dual-coding research. **However, the process was not without challenges like:**

Some students initially struggled to create logical symbols and needed scaffolding to move beyond decorative drawings toward meaningful representations. Students initially creating decorative rather than meaningful symbols.

Time management was another challenge, as role plays often required additional class minutes for preparation and transitions.

Maintaining classroom discipline during energetic dramatizations also demanded strict protocols—an issue echoed in prior research on drama-based pedagogy.

Despite these challenges, the collected evidence—student work samples, observation logs, short reflective surveys, and oral explanations—consistently showed improvement in conceptual clarity, enthusiasm, and retention. These outcomes reinforce earlier findings suggesting that multimodal engagement helps students bridge the gap between abstract scientific ideas and concrete understanding.

4. Reflections and Learnings

This study offered several insights into both student learning and my own instructional practices. First, I observed that students learn best when they are given ownership—whether through performing scientific processes or designing their own symbols. This supports constructivist perspectives suggesting that learning deepens when students actively build their own representations rather than passively receiving information. Students who initially appeared disengaged became contributors once the activities connected to movement, creativity, and peer collaboration—echoing findings that multimodal tasks widen participation and reduce performance anxiety.

A key insight was that students demonstrated stronger metacognitive awareness. Several students articulated why they chose particular symbols or how dramatizing a “life cycle” or “water cycle” helped them remember the sequence. This aligns with research showing that student-generated models increase reflection and conceptual ownership.

Examples from Classroom Evidence

“Why should I give my water to other country.” — Student A (Cloud)

“I am a cloud why would I give water to people.” — Student B (Cloud)

“Why my friend and I merge and convert into rain.” — Student C (Rain)

5. Relevance

The findings of this study offer practical, classroom-ready insights that other educators can readily adapt. Many teachers struggle with students’ difficulty in understanding abstract science concepts-an

issue widely documented in science education research. Role play allows students to *embody* scientific ideas, making learning more memorable and relatable. This supports earlier recommendations that active, participatory methods improve comprehension and reduce misconceptions. Similarly, encouraging students to design symbols or models nurtures visual thinking, creativity, and deeper conceptual reasoning-skills emphasized as essential by leading education frameworks. Research shows that multimodal approaches-movement, drawing, speaking, performing-engage diverse learners and strengthen retention. By documenting observations, student work, and feedback, teachers can make evidence-based decisions and refine their practice, echoing professional learning models that encourage classroom inquiry. While this intervention focused on science, the strategies of role play and student-created symbols hold strong potential across subjects.

- **Mathematics:** Embodied modelling of fractions, place value, geometry.
- **Language Arts:** Acting out narratives, symbols representing themes or character arcs.
- **Social Studies:** Historical reenactments and symbolic mapping deepen empathy and retention.

These strategies also support multilingual learners and neurodiverse students by reducing cognitive load and offering alternative pathways for expression.

CPA IN CENTRES: STRENGTHENING DEEPER MATH THINKING

Ms. Shreelakshmi Subbaswamy

Vijaya School

Sample Size:20

1. Introduction

a. Background of the Study

Over the past decade, early years mathematics programs have witnessed a significant shift in pedagogical expectations. However, in our classroom observations, we found that many learners could recite up to 100 and do operations, but were unable to compare quantities, understand measurement, estimate, or apply number sense in meaningful contexts such as sharing, grouping, or interpreting simple data, and hardly any integration with literacy, art, and play was seen. This gap motivated us to explore approaches that move beyond rote learning and encourage more student-led engagement. To address this, we designed an intervention that integrates Concrete Pictorial-Abstract (CPA)method, centre-based learning, and interdisciplinary approach.

Our action research examined the impact of this intervention on student learning, engagement, and conceptual depth. The observations and findings are presented in the following sections.

b. Our Approach to Mathematics Education in Early Years:

The Intervention Our Early Years Mathematics curriculum focuses on five key domains—number sense, geometry, measurement, patterns, and data handling—with balanced exposure at every level. The intervention is guided by four principles.

- **CPA (Concrete–Pictorial–Abstract) approach** supports deep, developmentally appropriate conceptual understanding.
- **Centre-based pedagogy** promotes independence, small-group interaction, and differentiation, allowing students to explore concepts through varied materials and hands on engagement.
- **Concept integration** strengthens analytical thinking by helping children connect and apply ideas across mathematical strands.
- **Interdisciplinary approach** reinforces real-life relevance, ensuring learning occurs in meaningful contexts rather than isolation. The intervention was implemented with 20 EY3 students (aged 5–6y) over four months.

2. Planning

a. Program of Learning:

A year-long mathematics milestone document was developed using national curriculum milestones and international benchmarks, ensuring horizontal and vertical alignment across age levels and mathematical concepts.

Unit-wise lesson planning was completed with four considerations:

- Every new concept must progress through the CPA approach
- Activities must be planned in 2–4 rotating centres,
- Each concept must integrate with two related mathematical concepts
- Each concept must have one/ two interdisciplinary links.

These considerations were observed in this lesson plan excerpt.

Topic: Statement Addition Problems

Warm-up and Recall of all the addition vocabulary: Vocabulary with Action

Concept integration: Number sense and Measurements; Interdisciplinary Integration: Literacy (Addition Vocabulary and reading)

Children rotate between centres. Each centre gets multiple story strips.

Centre 1: Build Using Counters (Join and Count) (Read- Do) – 10 Children

Teacher gives counters like beads, blocks, sticks, coins etc, addition cards and addition vocabulary cards

Example: Children take 5 + 3 blocks arrange say, I have 5 blocks; I add 3 more blocks altogether/together I have 8 blocks.

Concept integration: Number sense and Measurements; Approach: Concrete method; Interdisciplinary Integration: Literacy (Addition Vocabulary)

Centre 2: Read-Draw–Write (Story Cards) – 10 children

Children read a strip and draw the pictures and write numbers and add. Example: Two tall trees and three short trees in the garden. Total trees? (2 tall + 3 short = 5 trees) Children draw tall and short trees and count.

Concept integration: Number sense and Measurements; Approach: Pictorial and abstract method; Interdisciplinary Integration: Literacy (Addition Vocabulary) and fine motor skill

Teaching–Learning Materials such as board games, manipulatives, displays, and worksheets were developed according to the age. Seating was redesigned from rows to centre based group arrangements, enabling collaboration and active engagement.

Trial run was conducted for a month, which supported teacher confidence through continuous observation, feedback, and co-teaching.

b. Teacher Reflection

Anjali shared, "*My first class was a mess; I was running around as we moved centres… Now, with practice, the rotations run smoothly and I can engage every child.*"

Shreelakshmi reiterated, "*We trusted the process and stayed with it. We now see deeper learning and teachers becoming more confident*."

This collective ownership and bottom-up collaboration were key drivers of the intervention's success.

3. Intervention Strategy

a. Pre-Lesson Preparation

Each new concept began with a pre-task assigned as a home activity to activate prior knowledge and build curiosity. For example, before introducing addition, students watched a short story at home with guiding prompt questions. This prepared them to connect meaningfully with classroom learning.

b. Teacher-Led Explanation

In class, the concept was introduced through real-life examples and concrete materials. Teachers demonstrated the idea visually and verbally, building a common conceptual foundation before exploration.

c. Centre Activities

Students were then grouped and moved to 3 structured learning centres, each offering hands on, self-explanatory tasks. During the concept-development phase, all centre activities remained concrete and manipulative-based. Every student engaged individually within each centre while the teacher facilitated learning, asked probing questions, and documented observations using a checklist. Students who completed early accessed the Math Wall or concept-based board games, while those needing scaffolding received targeted support.

d. Centre Rotation

After a set time, students rotated using cues such as a bell or hand-clap. Some classes also developed self-managed rotation systems over time. In the extension phase, centres included tasks integrating interdisciplinary and cross-concept links, and gross-motor learning in collaboration with the physical education teacher. Each full cycle took 40- 50 minutes, followed by formative assessment through centre work or worksheets, with milestones recorded for each learner. Refer to the Centre-Based Activity Table for detailed examples.

e. Types of Data Collected & Tools Used

Evidence was collected through:

- Student work samples: photographs, videos, worksheets
- Observation tools: structured observation notes and checklists
- Assessment records: milestone tracking checklist and performance analysis
- Teacher voice: review discussion notes and field notes

These data sources collectively illustrate classroom implementation, student engagement, and conceptual learning progress. The next section presents observations supported by evidence gathered from these tools.

4. Observations and Key Findings

a. Classroom Environment

- Shift from teacher-led instruction to student-centered learning
- Classroom seating was changed to support peer interaction and collaborative learning
- Displays were actively used as learning resources, reinforcing vocabulary and concept recall
- Teachers demonstrated growing confidence in facilitating independent learning

b. Teacher Reflection

Anjali: "*I was nervous to move away from blackboard teaching… but giving students opportunities to learn independently is satisfying. They learn better now*."

Shreelakshmi: "*The detailed discussions and demonstration of how centres work helped shift teacher mindsets. When we give agency to students, they take ownership of learning*."

c. Learning in Centres: Key Observations

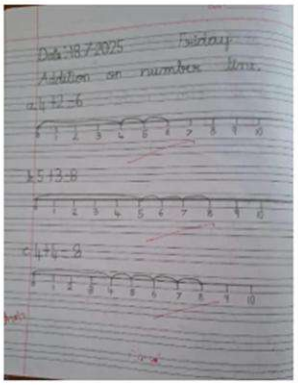
Before	After Intervention
whole class instruction	differentiated small group learning
no peer – support collaboration	evidence of peer support and collaboration when children faced difficulty
limited hands-on learning	material – rich exploration
focus on abstract method	Progress from concrete-pictorial to abstract
no integration of other concepts/disciplines	explicit integration and reinforces concept learning
teacher as primary knowledge source – linear teaching	teachers moved across centres to facilitate rather than deliver instruction

d. Student Engagement & Performance

- Conceptual Understanding
  - Stronger concept clarity, application, and higher-order thinking
  - Students progressed beyond milestones
  - Example: Moved from solving addition problems to creating their own problems
  - Smooth transition from concrete → pictorial → abstract (CPA)
- Learner Autonomy
  - Students independently engaged with tasks and explained strategies
  - Created their own learning activities and games post-centre rotations
  - Increased self-management: turn-taking, sharing, reduced disruptions
  - Teacher role evolved from manager to facilitator
- Use of Math Vocabulary
  - Explicit usage of math vocabulary like- count on, together, longer, 3 time taller etc.
  - Read–Draw–Write strategy strengthened comprehension and application
- Joyful Learning
  - Students expressed visible excitement and persistence in problem-solving
  - Actively requested more activities, asked questions, and clarified doubts
  - Continued learning even after school hours—teaching younger peers

Number Sense: Comparison of numbers (1 to 20). Approach: Concrete, Pictorial Abstract; Concept Integration: (Measurement (comparison); Interdisciplinary Integration: Themes- Community Helpers, Play.

Number Sense: Addition (0 to 10); Statement Addition Problem; Approach: Concrete – Pictorial – Abstract; Concept Integration: Measurement (Comparison); Interdisciplinary Integration: Fine motor, Play, Literacy, Themes



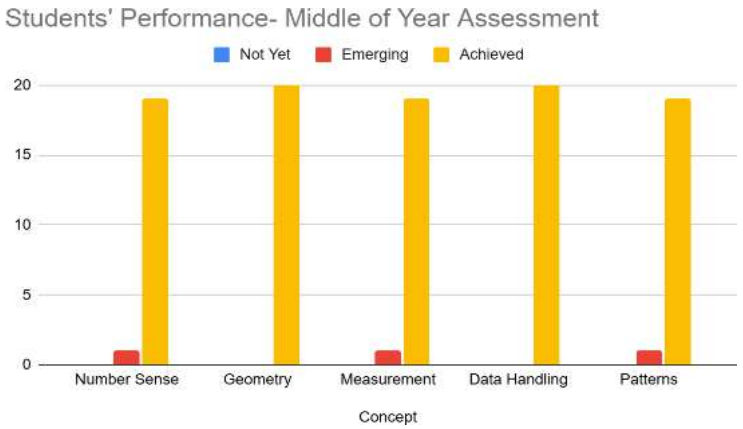
Integration: Number sense, geometry; Interdisciplinary- Fine motor

ntegration: Geometry; Interdisciplinary Integration-

e. *Assessment Outcomes*

- Periodic and formative assessments were conducted to monitor progress and remediate gaps
- Almost all students achieved milestones across all five concepts
- Several students demonstrated advanced performance beyond expected levels

The graph below shows the performance across all concepts.



5. Reflection & Learnings – What Did We Learn?

Regular review meetings, collaborative planning discussions, and post-lesson reflections with peers, academic head, and experts strengthened the intervention.

a. *Key Insights About Students*

- Students learn on their own, hands-on learning builds confidence in learning mathematics.
- Small-group settings naturally promote collaboration and peer support.
- Students show strong ability to relate mathematics to real-life situations when supported with appropriate tools and contexts.

b. *Key Insights About Teaching*

- Multiple task designs for a single concept deepened understanding and promoted higher order thinking.
- Teacher role shifted to facilitator, guiding learning through questioning and observation rather than directing.
- Centres helped support diverse learning needs and differentiation.

c. *Challenges Faced*

- Some students initially preferred concrete materials and hesitated to shift to abstract tasks.
- Smooth centre transitions required structured routines and practice.
- Time and resource preparation demanded additional planning and coordination.

d. *What We Would Improve Next Time*

- Introduce self-check / tracking cards for centre completion.
- Add more real-life interdisciplinary applications.
- Encourage student-created learning materials to build ownership.
- Integrate paired learning

6. Relevance & Adaptation – How Can Schools Adopt This?

We identified six essential factors to implement this model in diverse school settings in India and globally:

- Developmentally appropriate and well-sequenced and balanced curriculum and a combination of pedagogical frameworks.
- Teacher mindset—readiness to experiment, take risks, and reflect openly.
- Supportive leadership & professional development- continuous mentoring, co-teaching, and feedback culture.
- Collaborative planning & reflective practice through peer review and shared ownership.
- Rich and varied resources—open-ended, natural, teacher-made, student-made materials.
- Learning-oriented seating design that promotes collaboration and movement.

PROMOTING CREATIVE AND ORIGINAL THINKING THROUGH OPEN-ENDED QUESTIONS IN BIOLOGY FOR GRADES 8 AND 9

Ms. Rashmi Gupta

GEAR Innovative International School

Sample Size: 56

1. Introduction & Rationale

In my Biology classrooms, I often noticed that students confidently produced neat, memorised responses but seldom attempted original or imaginative explanations. Even the most sincere learners remained within the limits of "expected answers." Yet, the moment they were asked open-ended questions, something shifted; their ideas expanded, they drew analogies, connected multiple concepts, and expressed Biology in surprising and creative ways.

These moments became the trigger for my study. I wanted to explore whether open-ended questions could truly transform the learning environment by encouraging curiosity, deeper thinking, and original responses. This led me to carry out a focused intervention using open-ended questioning as an intentional pedagogical technique for Grades 8 and 9.

2. Intervention Strategy

I designed an intervention comparing student responses to closed-ended versus open-ended questions in two of my ongoing Biology topics:

Grade 8: Cells

Grade 9: Types of Tissues

a. How I implemented it

The research ran for approximately 4 weeks during my regular Biology periods. Students first answered a set of traditional closed-ended, factual questions, such as:

- What are the four main types of tissues found in the human body?

- Name two plant tissues involved in the transport of water and food.
- Which tissue in animals helps in movement?
- State the functions of xylem and phloem in plants.

During the following classes, students were given thought-provoking open-ended questions, such as:

- If you could shrink yourself and travel inside a cell, which organelle would you visit first and why? What would you expect to see or experience there?
- Suppose you could design a new organelle to make cells more efficient. What would it do, and how would it change the cell's functioning?
- If plant cells could write a letter to animal cells, what would they say about having a cell wall and chloroplasts?
- Imagine you are designing a new organism for life on another planet. Which tissues would you modify or invent to help it survive in that environment, and why?
- If each type of tissue in your body had a voice, what message would it give about the importance of teamwork in keeping you alive and functioning?

b. Evidence collected included:

Students' responses, Observation notes on engagement, Informal conversations and student reflections The goal was to examine whether open-ended questions genuinely promote:

- Original thinking
- Creativity
- Deeper explanations
- Confidence in expressing personal ideas

3. Observation and Evidence

a. Student Responses:

The evidence collected through worksheets, notebook entries, and classroom observations showed a clear shift in the quality and depth of student thinking when responding to open-ended questions. Their answers became richer, more imaginative, and far more personalised compared to the factual, brief responses seen in closed-ended tasks.

Students came up with:

- Interesting and creative explanations for biological processes
- Inventive new cell organelle ideas with unique functions
- Thoughtful appreciations of specific tissues or cells, such as why muscle tissue inspires them or how neurons resemble communication networks
- Expressions of personal interpretations, often connecting Biology to real-life experiences

b. Engagement:

The engagement level during open-ended question sessions was significantly higher. Students enthusiastically expressed their ideas using the dominant multiple intelligences they possessed:

- One student created a rap song on muscle tissues
- A few students illustrated imaginative diagrams of redesigned cells

- Some presented analogies comparing tissues to machines, fabrics, and communities
- Others wrote reflective descriptions that went beyond textbook learning
- The classroom atmosphere became lively, collaborative, and curiosity-driven as students eagerly shared their interpretations.

c. Any Surprises?

One of the most delightful surprises was that shy and usually quiet students produced exceptionally creative work.
For example, a soft-spoken Grade 9 girl presented her response through a beautifully crafted pop-up story card, weaving tissue functions into a narrative form.
Such moments revealed that open-ended questions allowed students with different personalities, strengths, and learning styles to shine in ways not visible during routine assessments.
Overall, the evidence clearly showed that open-ended questioning not only deepened conceptual understanding but also unlocked creativity, originality, and confidence among learners.

4. Reflections and Learnings

"Imagination is more important than knowledge. Knowledge is limited. Imagination encircles the world." - Albert Einstein

a. Insights About My Students

This study helped me see my students in a new light. When freed from the pressure of giving the "right answer," they demonstrated remarkable imagination, confidence, and depth of understanding. Their open-ended responses revealed:

- A strong ability to connect biological ideas to real-life experiences
- A natural inclination towards creativity when given space to express it
- The presence of multiple intelligences influences how they think and communicate
- A surprising level of originality, even from students who usually stay quiet or reserved
- The creativity displayed in their work: imaginative analogies, redesigned cell structures, handmade models, raps, and illustrated concepts, showed me that students are capable of deep and meaningful learning when assessment is not limited to factual recall.

b. Insights About My Teaching

This intervention made me reflect deeply on my own practices. I realised that:

- I sometimes underestimated the level of creative thought students could bring into science.
- The type of question I ask directly influences the type of thinking students engage in. Open-ended questions shift the classroom atmosphere from "answering" to exploring.
- Creating a supportive environment where originality is welcomed is essential for students to express unusual or imaginative ideas.
- I also learned the value of pausing, listening, and allowing discussions to evolve naturally, something I will consciously practise more often.

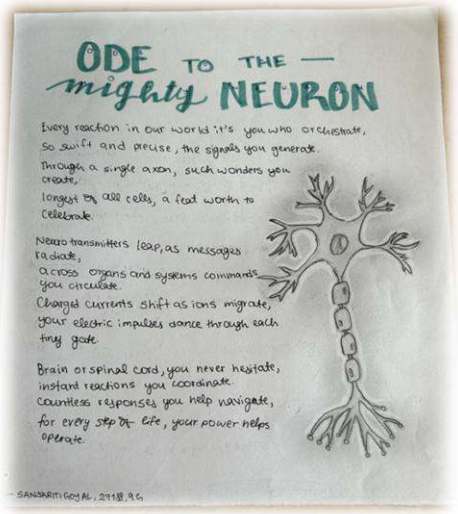
c. What I Might Do Differently Next Time

For future iterations, I would:

- Model a few open-ended responses at the beginning to guide hesitant students without

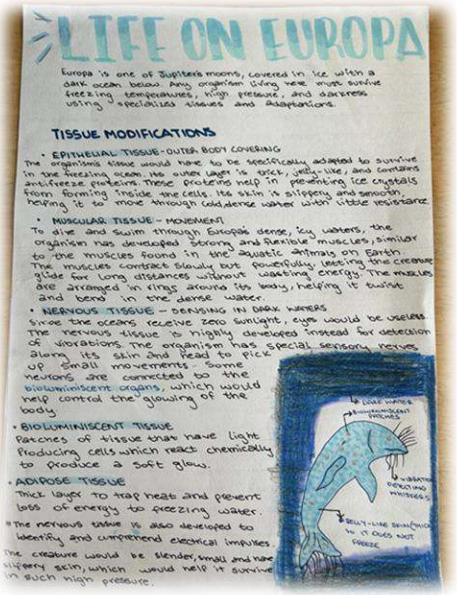
restricting their creativity.

- Spread the intervention over a longer duration, allowing creativity to become a natural part of class culture.
- Incorporate student reflections after each activity so they can track their own growth as thinkers.
- Use differentiated prompts to support students who need scaffolding without limiting expression.

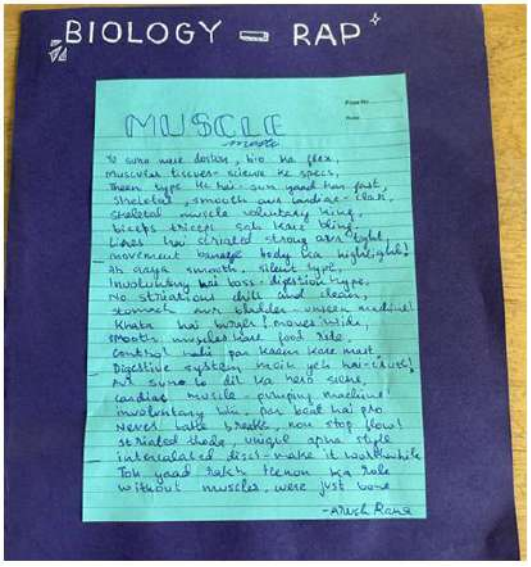


A poem by a grade 9 student

Idea of a new cell organelle by a grade 9 student



Body tissue modifications for life on another planet, presented by a Grade 9 student.



Rap on the muscle tissues composed by a student

5. Relevance to other Educators

This study suggests that nurturing creativity in science classrooms does not often require elaborate resources; it simply begins with thoughtful and well-crafted questions. Open-ended questioning is a flexible approach that can be used in any grade level, across subjects, and in diverse school

environments. It naturally supports inquiry-based learning, deepens conceptual understanding, promotes student ownership of ideas, and enhances overall motivation. Educators seeking to move beyond rote learning may find this strategy both accessible and impactful, offering students meaningful opportunities to think, explore, and express themselves more freely.

6. Reference Materials & Data Evidence

Materials Used

- Question sheets (open-ended and closed-ended)
- Observation notes during class discussions

Data Evidence Patterns observed across 56 students:

- The majority showed higher engagement with open-ended tasks
- Responses became longer and more descriptive
- More students used examples, analogies, and original comparisons
- A higher number of students voluntarily asked follow-up questions

CURIOSITY TO COMMUNICATION: STRENGTHENING KINDERGARTEN LANGUAGE SKILLS THROUGH ENQUIRY-BASED PEDAGOGY

Ms. Lipika Agarwal

The Millennium School

Sample Size: 22

1. Introduction

In my classroom, I consistently observed that some children remained passive during routine drills but became unexpectedly expressive when invited to ask "why," predict outcomes, or finish imaginative sentences. This observation served as the classroom trigger, revealing that traditional question–answer patterns were not offering adequate opportunities for children to think aloud, experiment with vocabulary, or construct complete sentences. Enquiry-based pedagogy—where children wonder, question, imagine, and articulate.

For many first-generation learners, such opportunities are essential because vocabulary exposure and conversational routines at home may be limited. This study explored whether integrating structured enquiry cycles into daily practice would accelerate language growth and strengthen confidence in communication.

2. Intervention Strategy

A 4-week structured intervention was implemented, following a step-by-step plan that blended child-led questioning with teacher scaffolding:

a. *Wonder Wall Routine*

- Children dictated or drew their "I wonder…" questions.
- Teachers scribed these in simple sentences.
- Questions became a springboard for daily discussions.

b. Talk Circles (Daily, 10 minutes)

Open-ended prompts used:

- "Tell me about a place you love…"
- "What makes you feel proud?"
- Children practiced complete sentences, turn-taking, and descriptive vocabulary.

c. "Finish the Thought Circle" Using a Wonder Wand, each child completed playful sentence starters:

- "If I had wings, I would…"
- "My favourite sound is…"
- "I wonder why the moon…"
- This helped lengthen sentences, stimulate imagination, and build fluency.

d. Role-Play & Story Talk

After a story, children asked and answered their own "why" and "how" questions. They discussed characters' feelings, motives, and choices, which activated inferential language.

e. Innovation / Adaptation

All enquiry prompts were displayed visually using icons eyes for "observe," heart for "feel," thinking cloud for "wonder". The Wonder Wand was introduced to ensure equitable participation and ownership.

f. Evidence Types Used

- Student quotes (verbatim)
- Student work samples (Wonder Wall, journals)
- Photographs of Talk Circles
- Teacher observational notes

3. Observation and Evidence

a. Growth in Vocabulary & Expression

- A usually quiet learner said during Talk Circle:
- "My favourite sound is rain because it makes me feel sleepy."
- This was a notable shift from previously giving one-word answers.

b. Listening & Turn-taking Improved

Children waited for the Wonder Wand, showing increased patience and respect for peer speech**.**

c. Sentence Structure Became More Complex

During "Finish the Thought":

If I had wings, I would fly to my nani's house because she tells me stories."

d. Parent-reported Transfer

Parents shared that children initiated "Finish the Thought" games at home and asked meaningful why/how questions.

e. *Patterns / Surprises*

Several children who struggled with rote tasks excelled when discussing imaginative prompts. Enquiry fostered empathy: during Story Talk, children articulated characters' feelings without prompts. First-generation learners showed the fastest improvement, likely because enquiry did not require prior knowledge—only curiosity.

4. Reflection & Learnings

This study deepened my understanding of how *intellectual curiosity fuels language acquisition. I learned that when children are invited to wonder, predict, and imagine, they naturally stretch their vocabulary and construct longer ideas. The shift from teacher-directed questioning to **child-generated enquiry* empowered learners who were otherwise hesitant.

Two insights stood out:

- Language grows when learners feel ownership of ideas. Children spoke more confidently about questions they had generated.
- Enquiry supports not only speaking but thinking. Children began forming connections, giving reasons, and exploring cause–effect relationships.

Next Steps for Improvement

- Introduce picture cues for multilingual children to scaffold vocabulary.
- Create a monthly “Enquiry Showcase” where children present a question they explored.

5. Relevance

This study demonstrates that enquiry-based pedagogy is a low-cost, highly scalable method to strengthen communication skills in early learners. Teachers in any classroom can:

- Create a Wonder Wall with child-generated questions
- Use a talking object to ensure equitable turn-taking
- Replace yes/no questions with open-ended ones
- Incorporate imaginative sentence starters in daily practice
- Embed enquiry in storytelling and theme exploration

The model promotes voice, agency, and creative thinking—core 21st-century competencies.

UNDERSTANDING PERSPECTIVES: A PATH TO DEEPER INSIGHTS

Ms. Rashmi Ramesh

Sri Kumaran Public School

Sample Size: 128

1. Introduction

I noticed that whenever I initiated a debate in the class, the debates become emotional or polarized, with students unwilling to listen to differing opinions This reflected a struggle to move beyond one's own perspective. Many students find it difficult to give up or adjust their personal viewpoint in order to understand or adapt to the general perspective of the group. This resistance often stems from a strong attachment to their own beliefs, which they may see as part of their identity. As a result, any challenge to their ideas can feel like a personal attack, making them defensive and less open to compromise or collaboration.

2. Rationale: Why This Study Matters

From my observation, such situations often reveal how students prioritize being heard over understanding others. I also noticed that some students dominate discussions, while others withdraw when their opinions are not validated. This imbalance makes it harder for meaningful dialogue to occur. I often found myself reminding students that respect, empathy, and active listening can help shift the focus from winning an argument to engaging in shared learning.

This made me try this activity to help students to appreciate multiple viewpoints, and foster a more open minded and cooperative classroom environment. It was an attempt to make debates a discussion of different perspectives and not a confrontation. As the artefacts are not personally meaningful, students experience minimal emotional attachment to their initial interpretations. This facilitates greater flexibility in their thinking and receptiveness to group members' ideas.

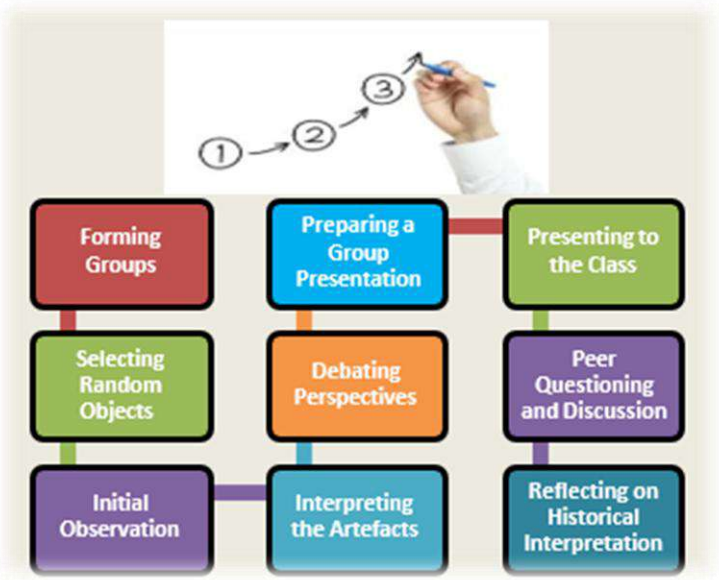
3. Intervention Strategy

a. Group Activity: Interpreting Artefacts from an Imagined Civilization

In this collaborative and inquiry-based activity, students work together to explore how historical knowledge is constructed through interpretation. The task blends creativity, critical thinking, and teamwork as students examine everyday objects through the lens of archaeologists uncovering a newly discovered civilization. This activity was conducted over a period of three weeks and used a combination of structured collaborative tools and digital assessment tools to support the activity.

b. Step-by-Step Intervention Strategy

- Forming Groups-Students are divided into groups of five.
- Each group becomes an "archaeological research team" responsible for studying mysterious artefacts.



c. Selecting Random Objects

- A box filled with assorted everyday objects (e.g., keys, buttons, figurines, tools, toys, containers, fabrics) is presented to the class.
- Each group randomly selects a set number of items from the box—these items now become "artefacts" from an unknown ancient civilization.

d. Initial Observation

Students carefully observe each artefact.

- They discuss physical features such as shape, material, colour, wear, and possible symbolic elements.
- Group members record their observations individually before sharing them aloud.

e. Interpreting the Artefacts

As a group, students imagine what each item might have represented in the fictional civilization. They consider questions such as:

- What was this object used for?
- What does it reveal about the people's beliefs, technology, or daily life?
- Could it have ceremonial, practical, or symbolic meaning?

Students are encouraged to generate multiple explanations rather than settle on a single answer.

f. *Debating Perspectives*

- Within each group, students compare their differing interpretations.
- They challenge one another's assumptions respectfully, offering alternative viewpoints.
- The goal is not to "guess correctly," but to explore how evidence can be interpreted in various ways.
- The group works toward a shared set of conclusions, acknowledging uncertainties or disagreements when necessary.

g. *Preparing a Group Presentation*

- Each group organizes their interpretations into a clear presentation.They explain:
    - The artefacts they selected
    - Their proposed interpretations
    - The reasoning behind each interpretation
    - Any disagreements or competing perspectives within the group
- Creativity is encouraged—students may create a name for the civilization or describe aspects of its culture inferred from the objects.

h. *Presenting to the Class*

- Groups present their findings to the class.
- They highlight how each artefact contributed to their understanding of the imagined civilization.
- Students practice clear communication, evidence-based reasoning, and collaborative storytelling.

i. *Peer Questioning and Discussion*

- After each presentation, classmates act as fellow researchers and ask critical questions.
- Questions might challenge assumptions, propose alternative explanations, or request clarification.
- This sparks whole-class discussion on interpretation, evidence, and historical thinking.

j. *Reflecting on Historical Interpretation*

- The class briefly reflects on the activity, discussing:
    - How interpretations differ from person to person
    - How historians and archaeologists must make educated guesses based on limited evidence
    - The role of perspective, bias, and imagination in constructing historical narratives
- This reinforces the core idea that history is not just facts—it is interpretation.

4. Observations and Evidence:

The data collected from the google forms responses regarding the activity and the teacher's observation during the activity points to the following inferences –

a. Overall Interpretation of the Data

- Students do NOT expect group work to be easy79% gave low ratings (1–2). Indicates group work is perceived as challenging or demanding coordination.
- Strong positive effects on perspective-taking. Nearly half (45.8%) strongly agreed that collaboration changed their perspective. Suggests positive social learning outcomes
- Potential reduction of biases-Reflection questions suggests students felt aware of their own biases.
- Engagement and performance -From chart shapes, engagement and enjoyment seem moderately positive.

Psychometric Construct	Evidence	Interpretation
Self-efficacy (group work)	Low expectation of ease	Students feel group work is demanding, not effortless
Engagement	Medium-high	Students are mentally invested
Intrinsic motivation	High	Enjoyment + willingness to reflect
Metacognition	High bias awareness	Students reflect on thinking, identity, assumptions
Social cognition	High consensus + perspective shift	Strong interpersonal processing
Cooperation	Strong peer evaluations (visible)	Groups functioned constructively
Conflict resolution	No resentment reported	Healthy dialogue within groups
Cognitive flexibility	High	Students open to changing ideas

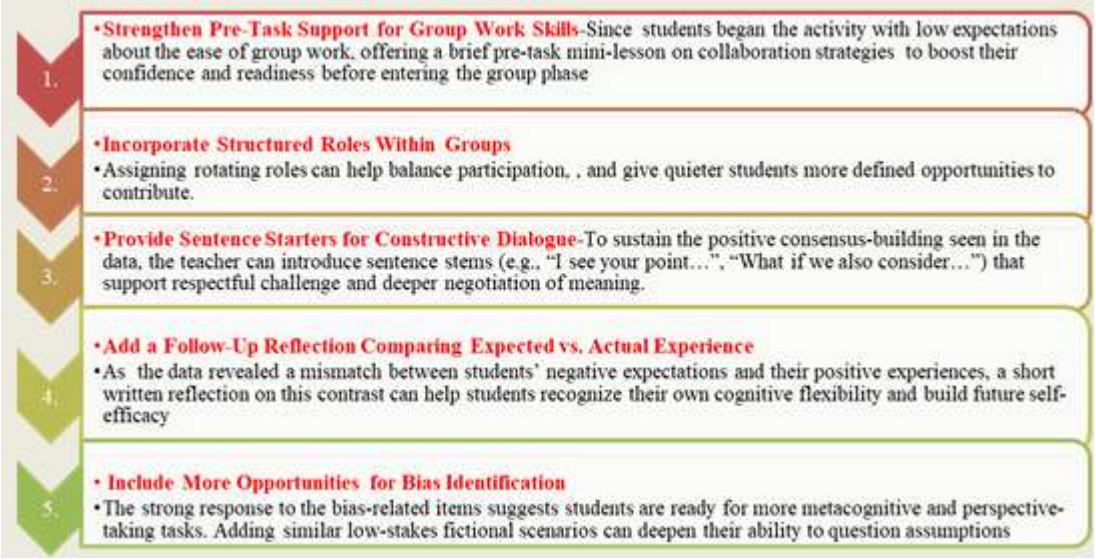
Summary of Psychometric patterns across the dataset

b. Teacher observation during the activity

Based on the students' responses, it was evident that although learners initially approached the activity with low confidence in group work their actual performance told a very different story. During group interactions, students demonstrated strong collaborative skills, engaging meaningfully with one another's ideas and showing a willingness to negotiate and resolve differences with consent and without disagreement. The students became more aware of their own biases and assumptions through discussion and comparison of ideas. From a classroom perspective, as a teacher I could observe that students who were initially hesitant became increasingly engaged and contributed actively to group dialogue. Overall, the classroom environment during the activity reflected productive collaboration, respectful communication, and intellectual openness—indicating that the task not only supported academic development but also fostered essential social–emotional competencies.

5. Reflections and Learnings:

Steps that can be taken to improve the activity



a. Insight About Student Learning

Students demonstrated significant growth in cognitive flexibility and perspective-taking. Although most students initially believed that group work would be difficult-their reflections show that collaboration ultimately enabled them to reconsider their assumptions, negotiate meaning, and change their viewpoints. Nearly half of the class (45.8%) strongly agreed that working in a group helped them shift perspectives and reach consensus without resentment.

This indicates that the activity effectively supported deeper learning processes such as critical reflection, empathy, metacognition, and the ability to evaluate ideas beyond one's initial stance.

b. Insight About Teaching Practice

Using fictional, low-stakes artefacts can enhance collaborative learning by reducing emotional defensiveness and promoting open dialogue. As the task materials were not personally tied to students, they appeared more willing to revise their first ideas and engage genuinely with peer feedback. The positive peer-evaluation patterns and strong agreement on bias-awareness reflection items suggest that the instructional design successfully created a psychologically safe space for students to experiment with ideas, negotiate meaning, and challenge assumptions. This highlights an important teaching insight: ***when designing collaborative tasks, choosing content that is emotionally neutral or fictional can help students focus on reasoning, communication, and group process rather than on defending personal viewpoints.***

6. Relevance to other Educators:

This analysis can help other educators by highlighting **how thoughtfully designed, low-stakes collaborative tasks can promote deeper cognitive and social growth in students**. The data shows that even when learners begin with low confidence in group work, structured activities using fictional or neutral artefacts can reduce defensiveness, encourage open dialogue, and lead to meaningful shifts in perspective and bias awareness. For teachers, this underscores the value of creating emotionally safe learning environments where ideas—not identities—are debated. By incorporating similar

strategies, such as guided collaboration roles or reflective prompts, other educators can foster richer discussions, more equitable participation, and improved metacognitive skills in their own classrooms.

a. Application value in Science or Math

In a science class, the teacher could present a fictional ecosystem or an imaginary planet with invented species and environmental conditions. Because students have no personal attachment to these fictional elements, they are more willing to question their initial assumptions and adapt their ideas based on group discussion.

Similarly, in math, the teacher might use a story-based problem involving imaginary characters or made-up scenarios to explore concepts like ratios, probability, or geometry. This removes fear of being "wrong" and encourages students to test ideas, negotiate reasoning, and build on one another's explanations. In both subjects, using fictional contexts helps students engage more openly, collaborate more effectively, and focus on the underlying scientific or mathematical thinking rather than worrying about defending personal viewpoints.

CUSTOM REVISION VIDEOS, SPOT THE ERROR - IMPROVE GRADE 10 MATH PERFORMANCE

Ms. Aarthy Balasubramanian

GEAR Innovative International School

Sample Size: 70 - 75

1. Introduction & Rationale

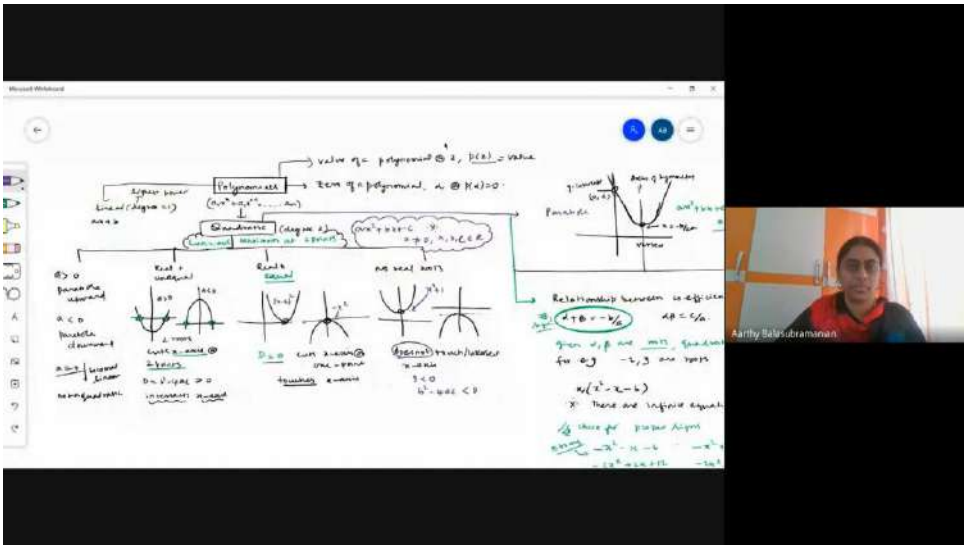
The trigger for this intervention was a glaring gap in 'application precision' during their term exams. Despite knowing concepts, students stumbled on nuances—like missing the negative x^2 coefficient in projectile motion or eliminating a valid solution while solving or swapping coordinates while applying the Section Formula. These were preventable errors, but occurred despite their conceptual understanding.

My rationale was that the sheer syllabus volume caused students to feel overwhelmed, leading them to "blank out" on critical 1 - 2 line details under pressure. The problem wasn't understanding in many places, but retention issues and exam stress and oversight errors. To address this, I wanted to create short custom chapterwise revision videos helping them revise key concepts, provide visual methods to avoid errors, key pointers to be watchful and build a strategy to make them identify errors so that they are less likely to repeat

2. Intervention Strategy

a. Strategy 1.1:

I had created One-Shot Revision Videos for every chapter, covering three aspects: Visual Mindmaps, Watchful Zones and Standard approaches

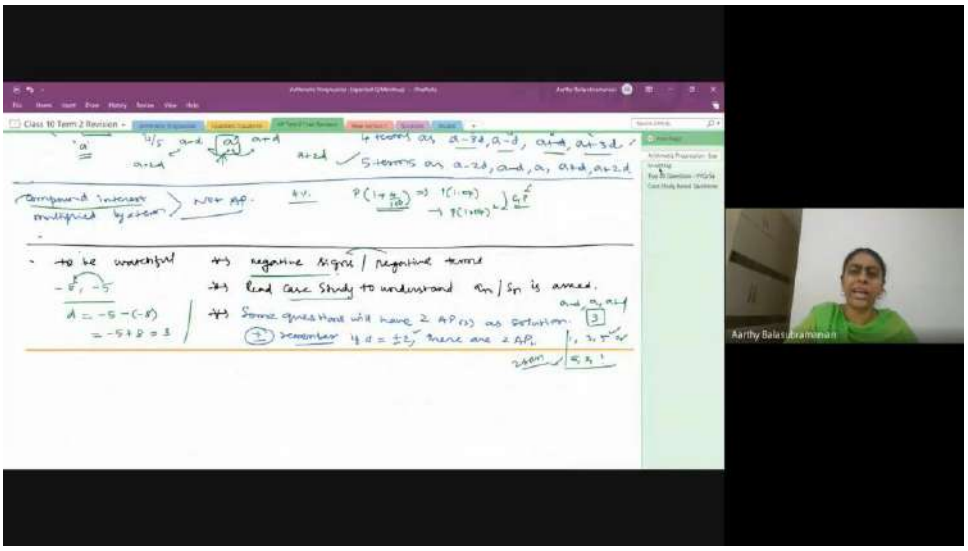


Screenshot from One-Shot Revision Video

b. <u>Strategy 1.2: Specific Watchful Zones are highlighted in each chapter's video</u>

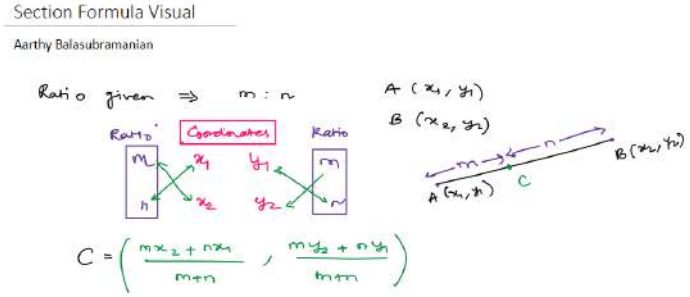
Screenshot from the videos, Example 1 equating 3 ratios, ensuring k satisfies both cases - figure on the right

Example 2 - Pointers to be Watchful in AP questions (figure below)



c. <u>Strategy 2: Innovative Visual Scaffolding</u>

Introduced a Visual mapping way to apply the section formula to avoid the error of choosing the wrong coordinate or missing the sign.



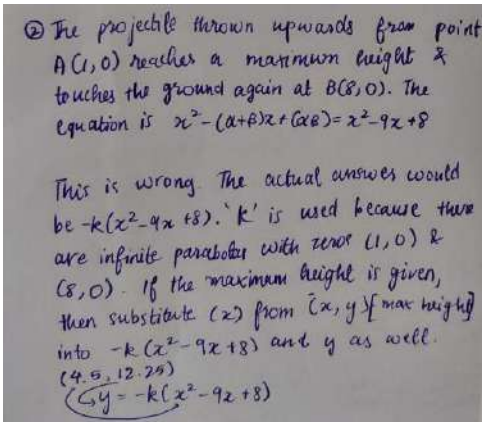
Section Formula Visual Mapping

d. *Strategy 3: Spot the Error Drill*

Instead of asking students to solve a problem, I presented them with some solutions containing deliberate, common error(s). Students had to identify if there was an error; if they spotted the error, they should explain why the step was wrong and correct it. This inverted approach forced them to engage with the logic of the error, making them far less likely to repeat it themselves.

Example 1: Question shows an error where x is cancelled.

Example 2: Students not applying the right ratios (confusing BPT ratio with similarity ratios)



Spot the Error — Sample Questions

3. Planning and Implementation

- First, I shared the one-shot videos and students had watched them before exams.
- Next, Spot the Error discussions were conducted in class
- Students attempted the Revision Tests to check the impact of these interventions

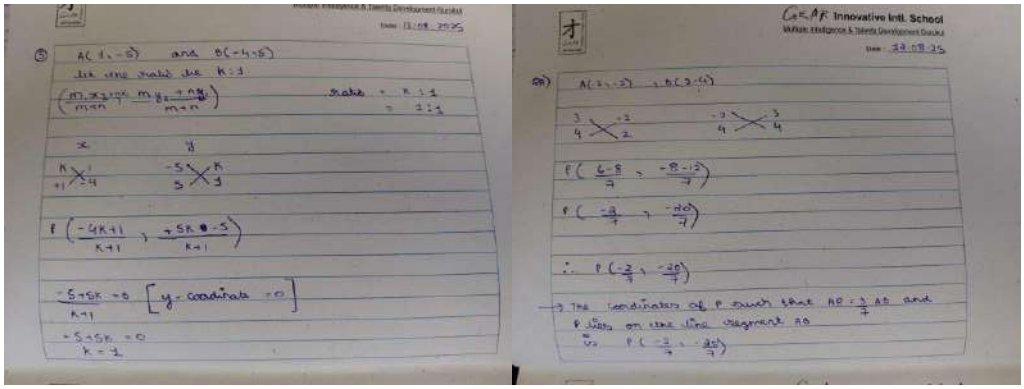
Tools/Activities: Used Google Meet to create my own recordings
Created a Set of Spot Your Error Questions

Duration : 3 months for the Spot the Error Strategy and
Revision videos - upgraded, extended to all chapters 1+ year

Evidence / Data : Classwork and Homework for Visual strategies and approaches
Revision Tests/ Google Forms

4. Observation and Evidence

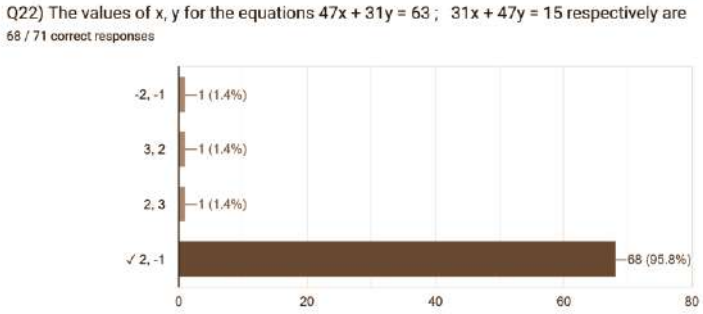
- Custom Video Link for 1 chapter Polynomials
- Classwork of students for new visual ways



Classwork of students for new visual ways *Student Work Sample*

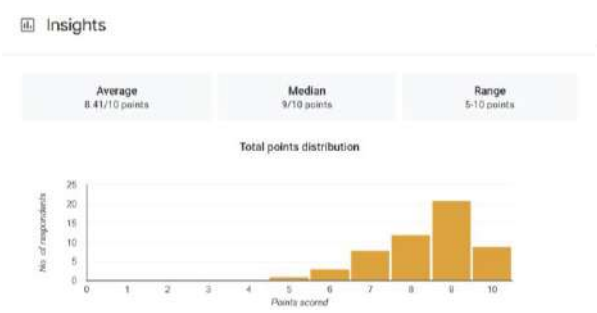
- Spot the Error - Sample Student Work

Showing sample responses relevant to the example interventions shown above. More than 90% of the students who attempted got these right.

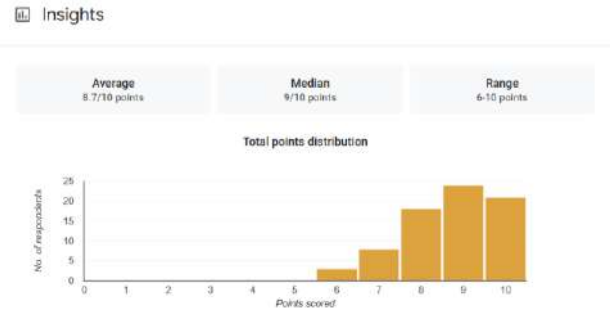


Sample Responses — 91.2% and 95.8% correct

Multiple Google Forms on chapter tests and Revision Tests post the interventions are showing improvement in concept understanding and reduced errors. Average scores are between 85 -90 % for the whole sample.



Revision Test Series 1 — Average 8.7/10, Median 9/10



Revision Test Series 2 — Average 8.41/10, Median 9/10

5. Reflection & Learnings

- One Shot Revision Videos: Students found this extremely useful before the whole syllabus exams, as it helped them grasp and revise critical concepts in a very short time.
- The Power of Inversion: The "Spot the Error" pedagogy was more effective than standard practice. Showing students a wrong answer taught them more about rigour than showing them ten right answers.

- Future Improvement: In the next iteration, I plan to have students create their own one-shot videos of any topic or chapter of their choice and also ask them to create "Spot the Error" questions to challenge their peers, deepening their mastery further.

a. *Student Reflections: Feedback Survey Google Form*

Form_Responses_2

Name	How useful were the custom vide	What was one specific area which was very useful for you personally ?
Student1	4	Video of explaining and highlighting important points
Student2	5	All the resources especially the short videos which I could use as a recap before the exams(trig identities, etc)
Student3	5	For trigonometry - the video about the approaches was very helpful and for all of geometry the practice questions also helped quite a lot.
Student4	5	The way the videos summarised the chapter(or a part of a chapter)
Student5	5	The detailed explanations for all the important questions in video format really helped as it allowed me to go back and revise important steps and concepts as many as times I wished.
Student6	5	The concept videos helped me revise those topics quickly and the mcq and a&r questions helped a lot.
Student7	5	The clarity in which difficult or tedious concepts were revised and explained while solving their problems.

Student Feedback Survey Responses

- **Conceptual Clarity:** "The clarity in which difficult or tedious concepts were revised... helped a lot." — (Student 7)
- **Retention & Review:** "Allowed me to go back and revise important steps... as many times as I wished." — (Student 5)
- **Strategic Focus:** "For trigonometry, the video about the approaches was very helpful." — (Student 3)

6. Relevance

This intervention is not limited to Mathematics; it represents a pedagogical framework that can be adapted by any educator.

a. *Universality of "Spot-the-Error"*

The "0, 1, >1 Error" drill is a powerful tool for any subject requiring precision.

- Science Adaptation: Teachers can present a circuit diagram with a missing key or a chemical equation with incorrect balancing, asking students to identify the number of errors to force a full system audit.
- Languages: Presenting a paragraph with deliberate grammatical "traps"(e.g., subject-verb agreement errors in complex sentences) builds the same vigilance required for editing.

b. *"Watchful Zones" across Disciplines*

Every subject has its "high-risk" areas where students lose marks despite knowing the facts.

- Social Studies: Teachers can map "Watchful Zones" for Map Work (e.g., confusing similar-looking coastal states or timeline dates).
- Physics: Sign conventions in Optics are a direct parallel to the Projectile Motion example used here; explicitly naming them as "Danger Zones" increases retention.

c. *Scalable & Cost-Effective:*

- Using free tools like Google Meet (for recording) and Google Forms (for validation) means this strategy can be implemented in low-resource settings immediately.
- The Visual Mindmap technique is a low-tech, high-impact method to support diverse learners who struggle with text-heavy revision.

EXPLORING THE EFFECTS OF GUIDED HANDS-ON ACTIVITIES ON STUDENTS' OBSERVATION AND INFERENCE SKILLS OF GRADE 6 IN SCIENCE SUBJECT.

Ms. Gayatri Deshpande, Ms. Jayashree Kadam, Ms. Shankari Rao

Dr. Kalmadi Shamarao High School

Sample Size: 30

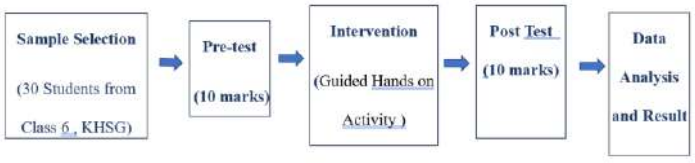
1. Introduction & Rationale

During the nature walk activity, students were asked to note done their observations in their books. However, it was noticed that students relied on online information to describe the plants they saw (as evident form the picture attached) instead of recording their firsthand observations. This indicated that students found it difficult to differentiate between what they saw (observation) and what they think or conclude(inference). This challenge led to the need for an engaging and hands-on approach to help students develop these core skills. Hands-on activities naturally require students to notice details, compare changes, record findings, and justify their reasoning all essential components of scientific process skills.

2. Intervention Strategy (What of the Research)

The strategy we used was Guided Hands on Activity for enhancing students' observation and inference skills of Grade 6.

a. *Plan:*



Intervention Plan Flowchart: Sample Selection → Pre-test → Intervention → Post Test → Data Analysis

A Pre-test of 10 marks was conducted followed by series of Guided Hands On activities. To strengthen observation and inference skills, a series of hands-on activities were introduced during a 2 months intervention period.

b. Activities included

- Leaf Observation (outdoor nature exploration) followed by drawing of leaves on the blackboard
- Chalk Dropping (classroom)
- Object Property Identification (Mystery Box Activity)
- Magnet Exploration (Lab Activity),
- Debate on Interesting Question (Is Sea shell a living or non-living thing?).

Each activity was structured with a clear observation table, guiding questions, and a follow-up inference task. After all the activities, post test was conducted.

Students worked individually and in small groups. Evidences were collected through observation sheets, student notebooks, group discussion responses, and teacher anecdotal notes.

3. Observation and Evidence

Students demonstrated higher engagement during hands-on tasks. Many were able to identify details that they previously overlooked in textbook-based lessons. A common challenge observed was that some students still jumped to conclusions without sufficient evidence, especially during early activities. However, by Activity 3 and 4, most students showed clear improvement in separating observation from inference.

4. Reflection & Leanings

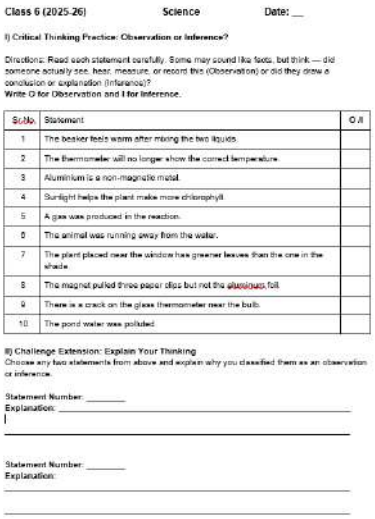
The intervention showed that hands-on activities significantly enhanced students' ability to observe closely and draw logical conclusions. Students became more confident in communicating their reasoning and showed greater curiosity.

A key learning for the teachers was that students need repeated practice with clear, step-by-step support to build these skills effectively. In future, more peer-discussion cycles and self-check rubrics will be added to strengthen the process further.

5. Relevance

This study can support other educators who face challenges in developing scientific thinking skills (observation and inference) in middle school learners. The activities are low-resource, easy to replicate, and adaptable to any science unit and experimental skills.

6. Reference Materials & Data Evidence



Class 6 (2025-26) Science Date: __

I) Critical Thinking Practice: Observation or Inference?

Directions: Read each statement carefully. Some may sound like facts, but think — did someone actually see, hear, measure, or record this (Observation) or did they draw a conclusion or explanation (Inference)?
Write O for Observation and I for Inference.

Sr.No.	Statement	O /I
1	The beaker feels warm after mixing the two liquids.	
2	The thermometer will no longer show the correct temperature.	
3	Aluminium is a non-magnetic metal.	
4	Sunlight helps the plant make more chlorophyll.	
5	A gas was produced in the reaction.	
6	The animal was running away from the water.	
7	The plant placed near the window has greener leaves than the one in the shade.	
8	The magnet pulled three paper clips but not the plastic foil.	
9	There is a crack on the glass thermometer near the bulb.	
10	The pond water was polluted.	

II) Challenge Extension: Explain Your Thinking
Choose any two statements from above and explain why you classified them as an observation or inference.

Statement Number: _____
Explanation: _____

Statement Number: _____
Explanation: _____

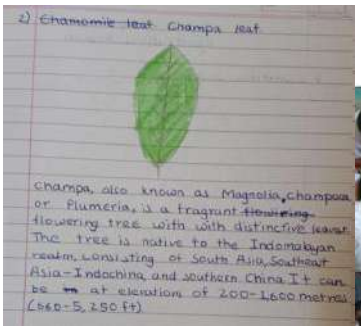
Pre-test / Post test (both had same questions)

PRE	POST
7	3
5	4
3	8
7	4
6	7
6	8
8	9
6	5
7	9
6	5
6	8
6	8
8	8
5	6
5	6
6	7
8	8
0	7
7	7
3	6
6	8
5	7
7	6
6	7
5	5
5	8
5	6
5	7
5	7
5	7

Pre vs Post test results data

a. *Key patterns /trends:*

- Based on the pre and post-test of 10 marks, it was observed that the mean increased from 5.6 to 6.7 after guided hands on activities were conducted.
- There was a steady rise in evidence-based reasoning.
- Improvement in structured observation recording.
- Higher participation during hands on activities.



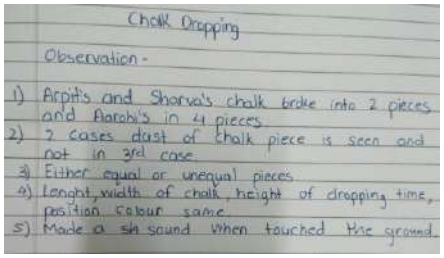
Student notebook showing reliance on online information instead of firsthand observations

Observing leaves

Drawing after observation

Chalk Dropping Activity

Recording Observation in tables



Observation sheet of Chalk Dropping Activity

EMPOWERING YOUNG LEARNERS AS WASTE WARRIORS: AN SDG-CENTRED INQUIRY IN ENVIRONMENTAL STUDIES

Ms. Lochan Manshani

Bluebells School International

Sample Size: 32

1. Introduction & Rationale

What triggered me to take up the theme of Waste Warrior was a series of everyday observations that revealed how early habits shape lifelong behaviours. I noticed food wastage during the mid-day meals in school—students leaving food uneaten, stacking plates without thought, unless constantly reminded by prefects. Similarly, lights and fans were left on in empty classrooms, and water taps were left running. These small yet repeated actions pointed to a larger issue: a lack of conscious awareness about resource use. I strongly felt that creating change early—by helping children understand the journey of food from farm to plate, and the cost and impact of wasting electricity and water—could nurture a deeper sense of responsibility. This led me to design the Waste Warrior projects for grades 3–5, to encourage inner change through awareness and empathy.

2. Intervention Strategy

The approach was rooted in observation-led inquiry, with the belief that early awareness shapes lifelong habits. The aim was to help students connect everyday actions—like wasting food—to larger global issues such as hunger, sustainability, and inequality. The focus was not just on information, but on nurturing inner change through real-world exploration, empathy, and reflection.

The project began with provocative burning questions that encouraged students to reflect deeply and critically:

- Why do you think we have taken up the issue of food wastage as our project focus?
- How significantly does food waste impact our local communities, the global environment, and the delicate balance of our interdependent food system?

These questions led to further inquiry-based prompts, such as:

- What are the top three reasons for food waste in our school cafeteria, classroom, or home?
- Can you identify and investigate the causes of food wastage in our local environment?
- Have you observed food wastage outside of school or home, like at weddings or events? Why do you think it happens there?
- Why shouldn't we waste food? What resources are used to grow, transport, and package the food we waste?
- When food is wasted, what happens to all the resources used to produce it?
- How are we all connected by the resources used to grow our food?

With this inquiry mindset established, 32 students were divided into 6 groups. Each group conducted on-ground observations outside classrooms during lunch hours, counting leftover plates and interviewing peers to uncover root causes of wastage.

Their findings revealed real and relatable reasons: large visible vegetable chunks, general dislike of certain dishes, and students rushing meals to get more playtime. These observations triggered meaningful student-led discussions and critical thinking.

To structure and extend their understanding, students used cause-effect-resource-action templates, linked their learning to SDG 2 – Zero Hunger, and studied Global Hunger Index data. Watching documentaries on food insecurity and diseases like marasmus further deepened their empathy.

a. Interdisciplinary Integration

This was not a standalone EVS project—it was a richly interdisciplinary initiative, integrated into regular subject periods with support from all subject teachers:

- Language & Literacy: Reading comprehension, skimming/scanning, vocabulary building, letter writing
- Mathematics: Rounding off numbers, writing data in word form, bar graph construction, data comparison
- IT Skills: PowerPoint presentations, data insertion, slide design, use of visuals and animations
- Research Skills: Gathering data, identifying causes, studying local and global impact, summarizing findings
- Creative Thinking: Poster-making, advocacy messages, class-led menu redesign, portfolio cover design
- Real-life Application: Food donation drive and interaction with underprivileged children to experience empathy and social responsibility

b. Tools and Activities

- Group observations and peer interviews
- Cause-effect-resource-action templates
- Comprehension worksheets (for developing reading, skimming, scanning skills)
- Vocabulary logs and concept maps
- Panel discussions (for developing communication and critical thinking)
- Real-world case studies (e.g., community refrigerators)
- Student-led school menu makeover (e.g., finely chopped veggies replacing large chunks)
- Class-run canteen for fundraising
- Poster-making and silent awareness march
- Donation drive and food-sharing activity

- Research-based learning to investigate global-local food wastage impact
- Numeracy integration through data: Writing numbers in word form, Rounding off for estimation, Comparing food waste statistics across countries, Presenting data via bar graphs and drawing conclusions
- Designing personal portfolio covers to document the learning journey
- IT Skill Integration: Final presentations via PowerPoint slides, integrating data, visuals, and personal reflection

c. Duration (Term 1: April–September)

This project was implemented over the course of Term 1 (April to September), spanning 6 months. One dedicated project period per week was allocated, in addition to integration within regular subject lessons. This allowed for repeated engagement, observation, skill development, and deeper understanding.

d. Evidence/Data Collected

The project's impact and progression were captured through:

- Student worksheets, vocabulary charts, concept maps
- Data tables and bar graphs from surveys and observations
- Photographs of awareness activities and donation drives
- Student reflections and presentation recordings
- Portfolio covers and final project submission
- Posters and visual campaigns created for school-wide awareness

3. Observation and Evidence

- Students showed genuine curiosity and ownership once they realized they were identifying problems from their own environment.
- The interviews and corridor observations created a sense of accountability—they were surprised at how common and normalized food wastage had become.
- As students began analyzing real causes (like vegetable size, dislike of certain foods, or rushing to play), they were shocked by how preventable many of these issues were.
- A significant "eureka moment" occurred when they connected everyday wastage to global hunger and malnutrition, making the issue personal and urgent.
- Their sense of empathy deepened after watching videos on hunger and seeing the Global Hunger Index, especially the conditions in countries like Somalia.
- Many students expressed anger, sadness, and motivation to act—a powerful shift from passive learners to active changemakers.

a. Challenges Faced

- Managing group dynamics and ensuring equal participation needed constant facilitation.
- Interpreting numerical data and creating bar graphs required cross-subject support, especially for younger students.
- Coordinating interdisciplinary planning among multiple teachers and ensuring project periods stayed on track took careful scheduling.
- One of the students' ideas was to install a community refrigerator as a solution. While the

intention was meaningful, further research and discussions revealed several real-world challenges:

- High cost of installation and maintenance
- No clear accountability for food safety
- Health risks, such as the possibility of someone falling sick from food kept by an unknown donor
- These limitations helped students understand that not all solutions are immediately practical, and every idea needs to be viewed through the lens of feasibility, safety, and sustainability.

4. Reflection & Leanings

I witnessed a remarkable transformation in how students observed, questioned, empathized, and acted. They became more inquisitive and reflective, learning to ask the "why" behind everyday actions. Their ability to connect local behaviours with global consequences, such as hunger and malnutrition, demonstrated growth in critical thinking, empathy, and social awareness.

The shift from instructor to facilitator allowed students to take ownership of their learning. Starting with real-life observations proved powerful—students cared more deeply when the problem was something they had seen or experienced themselves.

a. *Parent Feedback and Community Impact*

During Parent-Teacher Meetings (PTMs), several parents shared that they noticed a positive change in their children's attitudes toward food and waste at home:

- Children became more conscious about not wasting food.
- Many students suggested creative solutions, such as making new dishes from leftovers instead of throwing them away.
- Parents appreciated how the project fostered empathy, responsibility, and practical problem-solving in their children.

This feedback highlighted that the project's impact extended beyond the classroom, influencing family habits and nurturing lifelong values of sustainability and mindfulness.

b. *What I Might Do Differently Next Time*

- Create a shared project blog or digital wall to showcase student findings, reflections, and progress weekly.
- Build in more structured student journaling from the beginning to capture evolving thought processes throughout the project.

5. Relevance

This study offers several insights and strategies that can be applied in other classrooms:

- Inquiry-Based Learning: Demonstrates how starting with burning questions and real-life observations can foster curiosity, critical thinking, and empathy among students.
- Interdisciplinary Approach: Shows how a single project can integrate EVS, Math, Language, IT, and Life Skills, making learning meaningful and connected to real-world issues.
- Student Ownership: Highlights the benefits of shifting from teacher-led instruction to facilitation, allowing students to take charge of research, problem-solving, and action.

- Social Responsibility: Provides a model for engaging students in SDG-related projects, helping them understand local-global connections and nurturing values like sustainability, empathy, and civic sense.
- Practical Application: Offers activities, templates, and tools (observations, interviews, cause-effect templates, data analysis, poster-making, donation drives) that other educators can adapt for their own classrooms.

6. Reference Materials & Data Evidence

a. *Cause-Effect-Resource-Action Templates*

- Students began by identifying their own habits, such as wasting food at home, leaving food uneaten at school, or not storing leftovers properly.
- They gradually connected their individual behaviors to larger community and global problems, such as hunger, pollution, and overuse of resources.
- During discussions, students naturally linked the activity to previous socio-emotional learning themes, especially interdependence—realizing how farmers, cooks, servers, families, and the environment are all connected in the journey of food.
- One group wrote: “When we waste food, we are disrespecting the effort of the farmer and the Earth.”

b. *Socio-Emotional Connections*

- Several students brought up real-life anecdotes—like observing how some restaurants reward customers who finish their food or offer discounts for avoiding food waste.

  "My parents took me to a place where they give a discount if you don’t waste food. I think every place should do that!" – (Kimaya, Grade 4)

- These personal stories made the learning relevant and emotionally engaging, deepening their understanding of social responsibility.

c. *Student-Created Work*

- All output—file work, templates, reflections, posters, presentations, and class canteen planning—was done independently by students in class, without take-home assignments.
- Teachers served purely as facilitators, while students took full ownership—from data collection to poster creation.
- The posters showcased both emotional and factual appeals: drawings of hungry children, slogans like “Finish what you take” and “Wasting food = Wasting lives.”
- The cause-effect templates reflected maturity in thought; students wrote local effects like “children in our school cafeteria might not eat healthy meals again if food is wasted,” and global ones like “it adds to global hunger and affects poor countries.”

d. *Key patterns or trends:*

- All 6 groups successfully identified real causes of food wastage through observation and interviews.
- More than 80% of students demonstrated increased empathy when exposed to global hunger data and documentaries.

- 5 out of 6 groups asked follow-up questions independently after peer interviews, showing deepening inquiry skills.
- Vocabulary learnt and used in conversation: climate change, greenhouse gases, methane, sustainability, malnutrition, hunger, haves and have-nots, economic parity, etc.

SCAFFOLDING YOUNG MINDS: ENHANCING CRITICAL THINKING THROUGH VTR'S AND ITS SIGNIFICANCE

Ms. Manjusha S

Shiv Nadar School

Sample Size: 25

1. Introduction & Rationale

Having in worked in the IB curriculum for close to 6 years which anchors on inquiry-based pedagogy keeping the students at the centre, I have seen a lot of students from early years to primary students struggle to use their thinking skills effectively. While many students possess a wealth of information, they often struggle to organize their ideas, and some are unsure how to think exercise their thinking skills.

In the process of enhancing my teaching pedagogies to combat this challenge, I discovered that students thinking expands linearly and vertically while using VTRs (Visual Thinking Routines).

But it also occurred to me that VTRs not only helps in structuring their thinking process but also informs teachers about students learning as there are multiple tools suitable for using at various stages such as prior knowledge assessment, ongoing assessment(formative) and summative assessment. So, my study involving 25 students from grade 3 focuses on using VTRs as a scaffolding tool for students and as informative tool for teachers.

2. Intervention Strategy

a. The Strategy or Approach I Applied

I used VTRs as a scaffolding strategy to help young learners make their thinking visible, organize ideas, and engage in deeper inquiry. The approach focused on integrating selected VTRs at different stages of the learning cycle to enhance critical thinking, reflection, and problem-solving.

b. How I Planned and Implemented It

- Selected developmentally appropriate VTRs for Grade 3 learners.
- Introduced the routines gradually and repeated them across lessons.
- Created opportunities for individual thinking, group discussions and whole-class reflections.
- Encouraged students to take the lead so the classroom shifted from teacher-led to student-driven.

I implemented this strategy across 2 units – Conflict Resolution and Natural Disaster. I mapped specific VTRs to each phase of the inquiry unit on Conflict Resolution—starting with routines for activating prior knowledge (KWL Chart- What do I know, What do I wonder/want to know), followed by routines for exploring new concepts,(See-Think-Wonder) and concluding with routines for reflection and consolidation (KWL Chart – What did I learn). Lessons were designed to guide students gradually from simple observation to deeper reasoning, discussion, and application.

c. The Tools or Activities I Used

See–Think–Wonder: Activating curiosity and revisiting prior knowledge

Zoom-In: Encouraging attention to detail and deeper observation

Look–Think–Talk: Connecting visual stimuli to conceptual understanding

Four Corners: Taking a stance in a conflict and justifying opinions with reasons

Take a Stand / Opinion Corners: Understanding multiple viewpoints in a conflict

I Used to Think… Now I Think…: Capturing shifts in thinking over time

The study was conducted over two full units one on Conflict Resolution (approximately 4–6 weeks) and the other on Natural disaster (approximately 4–6 weeks), with repeated use of VTRs in multiple lessons. I provided inference sheets, anchor charts and discussions for students to catalyse their thinking process and the photos of the same will be used as evidence to support my claims.

3. Observation and Evidence

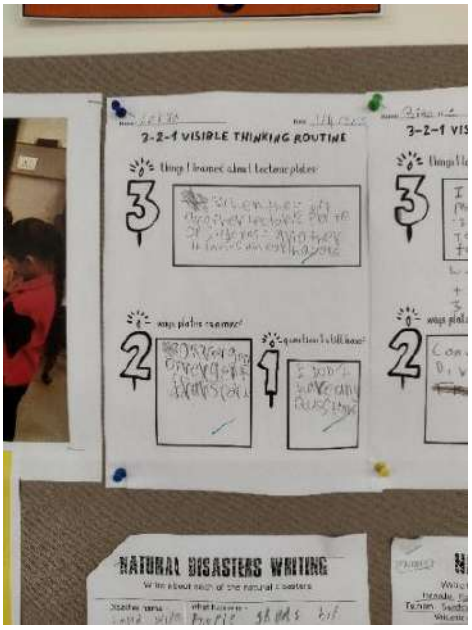
Over time, they began expressing their ideas with greater clarity, supporting their opinions with reasons, and showing improved perspective-taking during discussions. Activities such as group debates and perspective-based tasks revealed diverse viewpoints, and some responses were unexpectedly empathetic and thoughtful.

KWL (Conflict resolution) – served as great tool to gather data about what they know and want to know more this helped our fine tune our learning experiences towards that direction. And, after we completed the unit, I used the same KWL chart to share what did they learn to help children make comparison between how they have got answers for the ‘WANT’ section in KWL and it also helped me analyse their overall understanding of the unit.

See-Think-Wonder – We used this strategy to probe into math concepts, and this was embedded in the math curriculum that we use and more over this served as an excellent tool to gauge their focus.

Colour – Symbol – Image (CSI) – It was used during the case study on the Deochi Panchami coal mine in the Conflict Resolution unit. Since many students come from an affluent background, they initially struggled to understand the real hardships faced by the affected community. I revisited the lesson to help them connect emotionally and develop empathy. I intentionally incorporated this tool to uncover not just students’ surface-level understanding, but their evolving emotional and cognitive

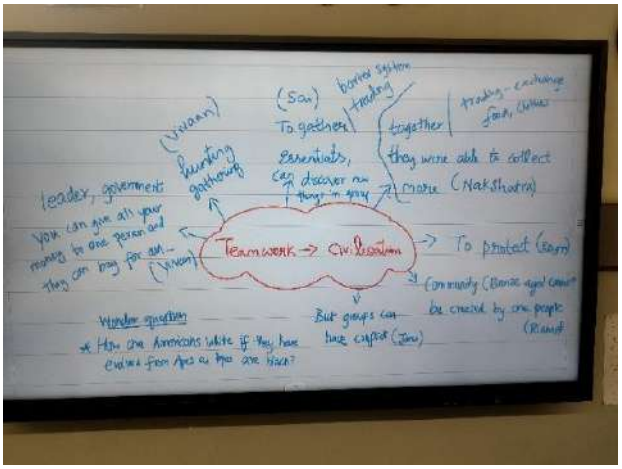
responses. By making their thinking visible, I was able to collect evidence on how students perceived the situation, whether they could shift perspectives, and how deeply they understood the social consequences of the coal mine conflict.



Colour – Symbol – Image (CSI) Student Work Samples

3,2,1 – This tool was used to gather students' understanding in the Natural Disasters unit while exploring the connection between earthquakes and tectonic plates.

Four corners – While teaching students about opinions, we divided the class into four groups, each representing a perspective in a conflict: the Clash Crew (problem creators), Captain Calm (mediators), the Looky-Loos (bystanders), and Judge Jump-In (authority). Students wrote why they chose their side of the conflict, and this tool helped us gather diverse perspectives—some of which were surprising.



Four Corners Activity — Conflict Resolution Perspectives

Zoom In – To introduce the topic of coal mining to students, which served as a prelude to the Deocha Panchami coal mine case study.

I used to think/do vs Now I think/do – Students wrote about how they used to handle a conflict before vs how they are handling now after having learnt about different ways to resolve a conflict peacefully. This tool helped me gather data about how students have reflected on their learning.

However, there were challenges. Due to their age, I could not use some VTRs that demanded higher cognitive load, such as Compass Points and Connect–Extend–Challenge. Another difficulty was documenting verbal anecdotes during routines like Zoom-In and See–Think–Wonder, as I was actively listening to student perspectives and facilitating discussions at the same time.

4. Reflection & Leanings

This study helped me see that students are capable of much deeper thinking than they initially demonstrate—especially when their thinking is scaffolded through structured routines. Over time, students moved from giving superficial answers to sharing richer, well-reasoned responses. They began showing greater empathy, which was an area of initial lag during discussions related to the unit or general topics. With the support of VTRs, students were able to slow down, reflect, and connect ideas rather than simply share facts.

I also learned that my role as a facilitator became more effective when I stepped back and allowed discussions to become more student led. As students started actively inquiring into the unit, the classroom gradually shifted from teacher-driven conversations to meaningful peer-to-peer dialogue. It was especially encouraging to see quieter students express their ideas confidently through inference sheets and written VTR tools, even if they were hesitant to speak aloud.

Another key learning was the value of gathering concrete evidence of thinking over time. The documentation offered clear insight into the progression of student understanding across the unit and helped me identify areas that needed revisiting. This evidence-based reflection strengthened both the teaching process and the learning outcomes.

Going forward, I would like to streamline documentation during verbal routines by incorporating tools like peer note-takers, digital recording, or quick reflection slips to capture student ideas without interrupting the flow of discussion I also hope to slowly introduce routines that require higher-level thinking. Instead of using them all at once, I will scaffold them step-by-step so students can build comfort and confidence.

5. Relevance

- This study is relevant to other educators because it shows how Visible Thinking Routines can be used not just as classroom activities, but as powerful scaffolding tools to help young learners think deeply. Many teachers observe that students often have knowledge but struggle to organize their ideas, justify their thinking, or show empathy. This research highlights a practical and accessible way to support those needs.
- The study also demonstrates how VTRs can help shift classrooms from teacher-led to student-led learning. When thinking becomes visible, students take more ownership of discussions, ask meaningful questions, and inquire more independently. Even quieter students, who may not usually contribute aloud, find a safe space to express their ideas through written routines.
- Another takeaway for educators is the benefit of using VTRs as a diagnostic and formative assessment tool. The routines helped capture concrete evidence of students' growing

understanding over time, which guided lesson planning and informed when concepts needed to be revised or taught differently. This approach can support teachers in making timely instructional decisions rather than waiting until the end of the unit.

- Finally, the study may encourage educators to look at empathy-building not as something that happens automatically, but as a skill that can be developed intentionally. By using routines during sensitive topics such as conflict, injustice, or natural disasters, teachers can support students in connecting emotionally with the content and understanding multiple perspectives.

6. Reference Materials & Data Evidence

- *Patterns or Trends Noticed*

Across the duration of the study, several noticeable patterns emerged in student thinking and engagement:

Shift from surface-level responses to deeper reasoning: At the start, most students shared short, factual answers. Over time, more students began explaining why they thought a certain way and supported their opinions with reasons and examples.

Growth in empathy and perspective-taking: Initially, students showed limited emotional connection to the challenges faced by communities in the case study. After repeated use of VTRs, more students acknowledged feelings, consequences, and multiple viewpoints involved in conflicts or real-world situations.

Increase in student-led discussions: Classroom conversations gradually changed from mostly teacher-driven to mostly peer-driven. Students asked questions, challenged ideas respectfully, and connected previous learning without teacher prompting.

Participation of quieter learners: A visible rise in contributions from usually quiet students was observed, especially through written formats such as inference sheets and VTR templates. Their written thinking showed depth even when they were less vocal.

Progress over time based on collected evidence: Comparison of early and later student work showed clearer thinking structure, richer vocabulary, and improved ability to organize ideas.

- *Student Data as Evidence*

Below are sample evidences collected through multiple modes. A link with further picture-based evidence has also been attached for your perusal.

Pictures:
https://drive.google.com/drive/folders/1RWKl3evsDMIImzVXbBS0rk1icBeMNNpU?usp=sharing

USING GUIDED INQUIRY-BASED TEACHING TO ADDRESS MISCONCEPTION ABOUT IMMUTABILITY FOR GRADE 11.

Ms. Niki Poddar

GEAR Innovative International. School

Sample Size: 20

1. Introduction & Rationale

Students struggle to understand and visualize immutability of data types in Python. Answers to one of the straight forward UT questions: “Define immutability.” glared at me asking for a better approach to put across the concept.

Over the years, I have seen students struggle with a few basic concepts in Python like immutability, copying or referencing, identity vs equality, multiple print statements with different separators and end values. Clarity of these concepts are important for them.

2. Intervention Strategy

Strategy - Socratic/Guided Inquiry-Based Teaching - posing a series of questions, supported by examples and prompts to guide the students towards discovering concepts on their own - leading to not just better understanding, but longer retention.

Planning and Implementation - A set of questions and example demonstrations were planned and used along with covering future chapters on Strings(immutable), Lists(mutable) and Tuples(immutable) using guided inquiry-based teaching.

Tools/Activities - Set of examples and questions(1 sample screenshot below) : Remaining questions are in the attachment.

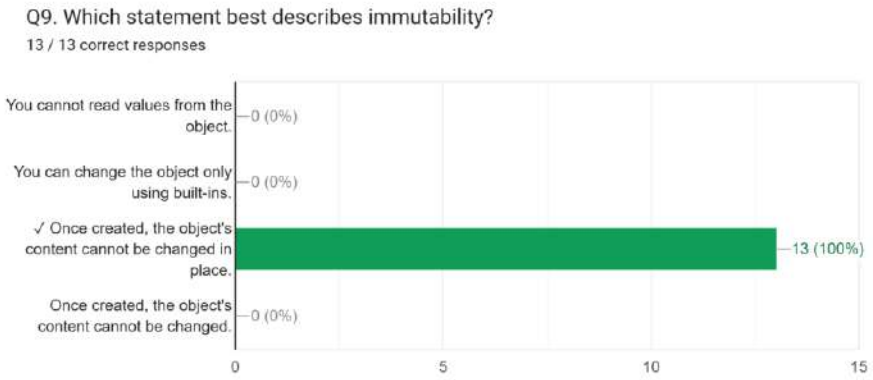
Sl. no	Q No. 6 ii Marks(out of 2 m)	Comment on the child's answer to 6 ii
1	2	
2	2	
3	2	
4	1.5	"in place" missing.
5	1.5	"in place" missing
6	1.5	"in place" missing.
7	1	"location/address of given object cannot be changed". E.g., a number is immutable - it's value cannot be changed to something different and it's id() remains constant.
8	2	
9	2	
10	1	"in place" missing. e.g. shows tuples are immutable. Doesn't highlight the fact the changes when done change the address.
11	0	Completely wrong way of stating. Slight understanding is there as tuple is quoted as example
12	1	data items whose fixed value and id cannot be changed once declared in the program. Example of a tuple.
13	0	"Object doesn't move from it's place." Talks about id but has not understood the concept.
14	2	
15	2	
16	1.5	"in place" missing
17	1.5	"in place" missing
18	1.5	"in place" missing
19	1.5	"in place" missing
20		Absent
21	2	

Sample questions and UT2 scoresheet with comments on student answers

Duration - 3 months (Mid-August 2025 till Mid-November 2025)

Evidence/Data - Screenshot of scoresheet - UT2 conducted in August vs response to online Quiz conducted in November

- UT2 held in August: Only 40% of students answered the question on immutability correctly.
- Quiz (Google Form) conducted in November (after implementation of Socrating Questioning): 100% students answered the question “Which statement best describes immutability” correctly.



Q9: Which statement best describes immutability? — 13/13 correct responses (100%)

3. Observation and Evidence

- **Student response:** Whenever asked why an operation can or cannot take place for a particular data type, students are able to think if it’s a change in place or not and whether the data type is mutable or immutable.

GEAR Innovative Intl. School

Multiple Intelligences & Talents Development Gurukul

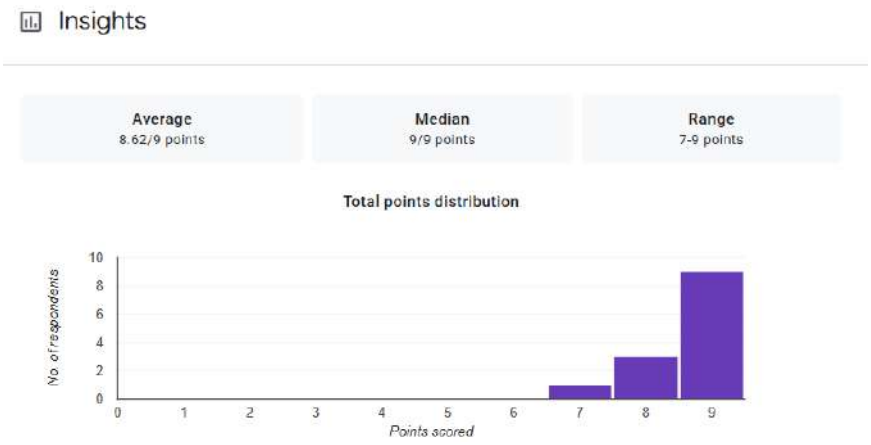
6	(i)	What will be the output produced by the following code ? print(2*'No'+3*'!') print(2*('No'+3*'!'))	(1)
	(ii)	What do you understand by the term 'immutable' ? Explain with the help of an example.	(2)

Student code response showing understanding of immutability vs redefinition

- **Surprise:** Many times, giving the students time to digest and repetition over a period of time are important factors in enhancing understanding and retention.
- **Evidence:** Google form response shows considerable improvement in understanding, with an average score of 8.62/9. Mistakes happened for Higher Level Questions, like

Q13. What happens here?
mixed = ("a", [1, 2], "b")
mixed[1].append(3)

This is a HOTS Question which involves modifying the element of a list within a tuple. Even though tuple is immutable, list is mutable, hence change is possible.



Post-intervention Quiz Score Distribution — Average 8.62/9, Median 9/9

4. Reflection & Learnings

- Rather than correcting errors directly, asking questions like "Is it a change in place ?", "What will be the id after this change?" gives them a sense of involvement. They start thinking and feel part of the discovery process. I have seen them thinking, debating with each other, asking further questions, coming up with typical examples which makes this a journey of learning and leads to longer retention.
  E.g., One day, when we were talking about creating a dictionary using - Key:Value pairs as keyword arguments to dict() function and when I gave the example : Emp = dict(1:'One','2;'Two'), it errored out. I asked them why ; the whole class was on its toes - everyone thinking, asking me to try different option and when the option - Emp = dict(name='John', salary=10000) worked, one of them(TJ) excitedly announced that keys should be identifiers, only then this method will work.
- The same example quoted above shows that Socratic questioning/ Guided Inquiry-Based

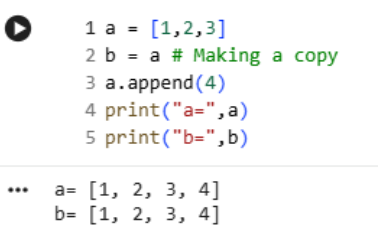
Teaching is not limited to the concept of immutability. It is useful to address different kinds of misconceptions and also to introduce a new concept.

5. Relevance

- Computer Science educators often struggle with helping students distinguish
  - what changes lead to change in memory location a variable is pointing to.
  - what changes take place without change in the memory location a variable is referring to and including how and why such changes occur.

Educators can use Socrating Questioning to identigy the gap and then help students in getting clarity.

- Computer Science educators can use the same approach of Socratic Questioning to cover other topics which are tough to grasp or which are usually misunderstood. Examples from Python:
  - **A variable is like a box which contains a value.** Reality : Variables are labels or references that point to objects in memory.
  - **When copying a variable to another, changes in one variable will not change the other variable.** Reality : Students expect b to remain unchanged, but b changes as both a and b point to the same list object and lists are mutable.

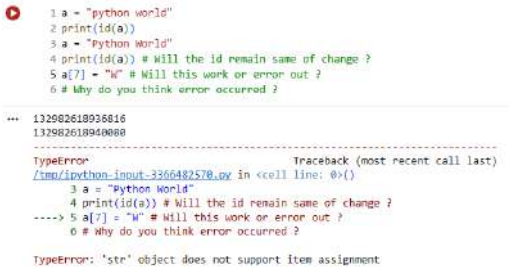


  - *Code example: a = [1,2,3]; b = a; a.append(4) — both a and b change*

  - **Tuples are just lists which cannot be changed. They are not very useful.** Reality: Tuples have many uses like dictionary keys (GPS Coordinates). Lists being immutable cannot be used.
  - **Changing a list while iterating is safe.** Reality: Removing items during iteration causes skipped items of errors. This can be demonstrated with the help of a code to remove items and aksing children why is it erroring?
- A similar approach can be applied to any other subjects and topics.
  Examples:
  - Bigger organisms have bigger cells which is not necessarily true.
  - Theoretical probability is different from experimental probability.

6. Reference Materials & Data Evidence

a. *Grade 11 Unit Test Paper - August*



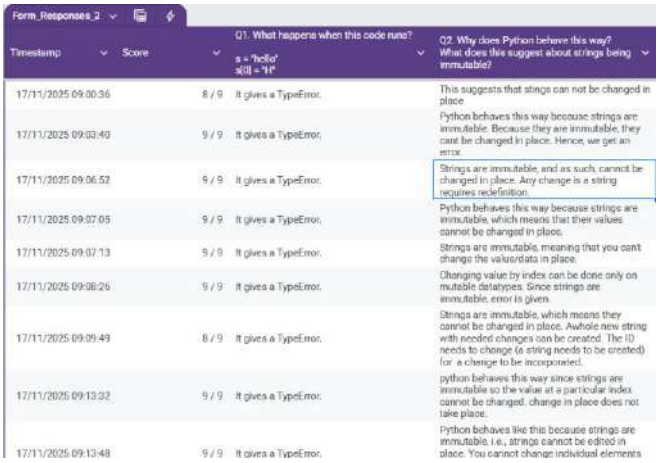
```
a = "python world"
print(id(a))
a = "Python World"
print(id(a)) # Will the id remain same of change ?
a[7] = "W" # Will this work or error out ?
# Why do you think error occurred ?
```

```
132982618936816
132982618940080
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
/tmp/ipython-input-3366482570.py in <cell line: 0>()
      3 a = "Python World"
      4 print(id(a)) # Will the id remain same of change ?
----> 5 a[7] = "W" # Will this work or error out ?
      6 # Why do you think error occurred ?

TypeError: 'str' object does not support item assignment
```

GEAR Innovative Intl. School — Unit Test Paper showing immutability question

b. *Google Form Response Summary after the use of intervention :*



Form_Responses_2

Timestamp	Score	Q1. What happens when this code runs? a = 'hello' a[0] = 'H'	Q2. Why does Python behave this way? What does this suggest about strings being immutable?
17/11/2025 09:00:36	8 / 9	It gives a TypeError.	This suggests that stings can not be changed in place
17/11/2025 09:03:40	9 / 9	It gives a TypeError.	Python behaves this way because strings are immutable. Because they are immutable, they cant be changed in place. Hence, we get an error.
17/11/2025 09:06:52	9 / 9	It gives a TypeError.	Strings are immutable, and as such, cannot be changed in place. Any change is a string requires redefinition.
17/11/2025 09:07:05	9 / 9	It gives a TypeError.	Python behaves this way because strings are immutable, which means that their values cannot be changed in place.
17/11/2025 09:07:13	9 / 9	It gives a TypeError.	Strings are immutable, meaning that you can't change the value/data in place.
17/11/2025 09:08:26	9 / 9	It gives a TypeError.	Changing value by index can be done only on mutable datatypes. Since strings are immutable, error is given.
17/11/2025 09:09:49	8 / 9	It gives a TypeError.	Strings are immutable, which means they cannot be changed in place. Awhole new string with needed changes can be created. The ID needs to change (a string needs to be created) for a change to be incorporated.
17/11/2025 09:13:32	9 / 9	It gives a TypeError.	python behaves this way since strings are immutable so the value at a particular index cannot be changed. change in place does not take place.
17/11/2025 09:13:48	9 / 9	It gives a TypeError.	Python behaves like this because strings are immutable, i.e., strings cannot be edited in place. You cannot change individual elements

Google Form Response Data — Student answers showing understanding of immutability

c. *Data - Students responses*

Students found answering the MCQs easy, but subjective questions made them think. They found putting their thoughts into words challenging.

d. *Summarise the key patterns or trends you noticed in words or through visuals (Graphs/Charts)*

- Accuracy rates for basic questions on immutability increased from 40% to 100%. (Charts and screenshots of data have been put earlier in this document)
- Children have started questioning any new concept introduced, they have started questioning themselves and exploring through this questioning has improved their overall programming skills as well.

A STUDY ON EFFECTIVENESS OF INTEGRATING COMPETENCY-BASED ASSESSMENT (CBA) STYLE QUESTIONS IN CLASSROOM TEACHING USING AI CHATBOTS

Mr. Satish Sarikonda

Srsvrgnr Zp High School

Sample Size: 40

1. Introduction & Rationale

As part of the educational reforms, Andhra Pradesh has introduced competency-based assessments called Classroom-Based Assessments, for which Educational Initiatives (Ei) serves as the assessment partner under the Supporting Andhra's Learning Transformation (SALT) project. The main intention of these assessments is to check the students' understanding and real-life applications rather than their rote memory capability. But in practice teachers and students are struggling to face these assessments, complaining that there are no textbook-type questions, and students are taking the assessments unprepared. This research paper finds the alternate solution to the teachers' complaints by integrating the AI-generated questions in the form of CBA style to give practice to the students. Also, a pedagogical approach for three types of reader ability students.

Using a quasi-experimental design, one chapter was taught with conventional methods, while another was taught using a novel pedagogical framework. This framework included AI-supported steps for comprehension, vocabulary building, conceptual questioning via ChatGPT, and practice with CBA-style papers. Results from descriptive statistics, paired t-tests, and Welch's ANOVA revealed a positive trend, indicating that the AI-enhanced strategy can effectively bridge the gap and improve student readiness for competency-based assessments.

2. Intervention Strategy

Two Lessons - Sound and friction from class 8 of NCERT physical science were taken

for the study. The sound lesson was taught in the traditional teaching style, and the friction lesson was taught in the proposed structure containing the steps.
Step 1: Comprehension and Chapter Orientation
Step 2: Loud Reading of the Lesson by All Students
Step 3: Asking the students to write down words and meanings in the lesson for vocabulary building,
Step 4: AI tools like ChatGPT were used to generate CBA-aligned concept-based questions.
Step 5: Preparation and testing of CBA-style questions.

Tools

- Comprehensive overview of the lesson based on "What We learn" in the text book.
- Loud Reading Activity
- CBA-style questions using Chat GPT for practice during the instructional time.
- CBA-style question papers for Two Chapters

Collected the evidences of students reading activity and the teacher giving explanation for Chat GPT generated CBA style questions. Students response sheets for the CBA style test in both the chapters.

3. Reflection & Leanings

The results clearly show that the usage of AI tools like ChatGPT for the generation of CBA-style questions and the effectiveness of the questions among the high-reading-ability students are very useful. Students can answer the concept-based assessments easily and confidently. The mean scores and ANOVA results support the strategy proposed. For the medium-reading-ability students, the strategy of loud reading practice will surely help in due course, as the mean values at this stage of ability slightly support the strategy. For low- or null-ability students, reading ability should be developed first to understand what the question is about. Even though the student may answer in oral questioning, for the written assessments, they must have the reading ability among the students.
The research provides practical, scalable insights for teachers, policymakers, and SCERT officials in Andhra Pradesh who aim to strengthen CBA readiness and classroom teaching quality.

4. Reference Materials & Data Evidence

In the below link the following activities videos, jpg, doc, excel files shared for the reference: Comprehensive Orientation_Friction, Vacabulary Building Work by Students, CBA Style_ChatGP_Practice_1, CBA Style_ChatGPT_Practice_2, Test conducted video, Conscent Note to students etc.

https://drive.google.com/drive/folders/10KNtJK8tCuiGwlPlsbG0OSl1LmLSkkZq?usp=sharing

a. Data Analysis

Descriptive Statistics: Mean

Reading Ability	Friction (New Strategy)	Sound (Traditional)

High (A)	8.85	6.54
Moderate (AM)	4.25	2.25
Low/None (N)	1.08	1.08

Interpretation

- Highest achievement: High reading ability group.
- Moderate: Middle performance.
- Low: Consistently lowest.
- Friction lesson shows **larger gaps**, suggesting the new strategy benefits strong readers more.

Paired Samples t-Test

Pair	t	df	p	Interpretation
Friction vs Sound (overall)	1.94	30	.062	Increasing the p value towards 1 indicates the improvement exists in favour of Friction. Sample increases the p value may be reach to nearer to 1

Interpretation

- A small improvement exists in favour of Friction (CBA-AI strategy).
- Trend suggests potential benefits that may become significant with larger samples.

Welch's One-Way ANOVA

Topic	F	df1	df2	p	Interpretation
Friction	46.6	2	7.29	< .001	Highly significant
Sound	20.7	2	7.86	< .001	Highly significant

Interpretation

- Strong ability-based differences in both lessons.
- More extreme differences in Friction (new strategy).
- higher reading comprehension ability will help the performance of the student.

Conclusion

The results clearly show that the usage of AI tools like ChatGPT for the generation of CBA-style questions and the effectiveness of practicing these questions among the high-reading-ability students are very useful. Students can answer the concept-based assessments easily and

confidently. The mean scores and ANOVA results support the strategy proposed. For the medium-reading-ability students, the strategy of loud reading practice will surely help in due course, as the mean values at this stage of ability slightly support the strategy. For low- or null-ability students, reading ability should be developed first to understand what the question is about. Even though the student may answer in oral questioning, for the written assessments, they must have the reading ability of the students.

Relevance

The research provides practical, scalable insights for teachers, policymakers, Educational Initiatives (Ei) and SCERT officials in Andhra Pradesh who aim to strengthen CBA readiness and classroom teaching quality. The study concludes that integrating CBA-aligned questions into classroom teaching—supported by AI tools like ChatGPT—holds strong potential to improve student learning outcomes. It bridges the gap between instruction and assessment, enhances conceptual understanding, and prepares students more effectively for competency-based questions.

IMPACT OF LITERACY GROUPS IN SKILL DEVELOPMENT

Ms. Monica Kalra & Ms. Misha Bhola

Bluebells School International

Sample Size: 55

1. Introduction & Rationale

Different Readiness Levels

- As a kindergarten teacher, we felt that it becomes challenging to cater to each child's literacy needs in a big class setup as they are at very different stages of literacy development — some may already recognize letters or read simple words/ sentences, while others were still learning to identify sounds or hold a pencil.
- We wanted to give them personalized attention, focused skill development, active participation, build their confidence, build their peer learning, social skills and track each child's progress. This led us to think of a pedagogy to overcome these challenges and help them in further developing their reading and writing skills. So, we began our journey on working in small literacy groups. This allowed us to meet each child's need — providing support or challenge as needed.

2. Intervention Strategy

Step 1- Assessing Each Child's level

Each child's progress was evaluated according to four levels of achievement:

- Exceeding Expectations
- Meeting Expectations
- Approaching Expectations
- Beginning to meet expectations

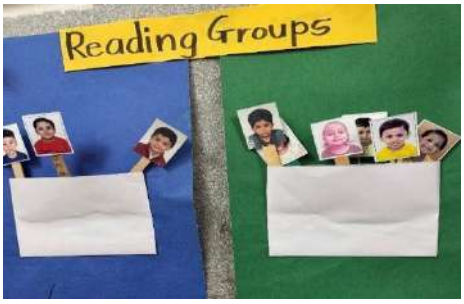
	Exceeding Expectations	Meeting Expectations	Approaching Expectations	Beginning to meet expectations
Language Skills				
Listening Skills				
Identifies the three sounds in CVC words				
Listens to short simple stories for 8-10 minutes				
Speaking Skills				
Speaks about a picture in 2-3 sentences using appropriate vocabulary				
Answers simple questions related to short stories using appropriate vocabulary				
Reading Skills				
Recognizes and matches letters to their sounds				
Reads CVC words with accuracy and fluency				
Writing Skills				
Write the letters correctly				
Write 3 letter words correctly				

Step 2- Visual Expectations for Guided Reading & Literacy Centres- Class Agreements

- The teacher discussed the class agreements, which is displayed and visible to the whole class. We have introduced students to the notion of 'three before me' (checking-in with self; observing others; and asking a friend)

- The different materials used during the literacy group was introduced and demonstrated to the whole class. The teacher continually emphasize (through visuals & conversations) the importance of treating these materials with gentleness, love, and care.
- The children were made aware of their groups, which was according to the colour of the table they were sitting at. Their photographs were put in the colour coded pouches matching the colour of the table and displayed in class. On rotation, the teacher assigned the role of a

leader to a child. Initially we conducted group finding drills in the classroom.



Step 3- Planning – Weekly

Number of periods – 3 days a week

Duration – 40 minutes

To support our literacy centres we have other classes like story telling (twice a week), phonics (1 period- letter introduction/sight word introduction), and writing – 1 period conversation – 1 period, 10 minutes recap during Circle time in the morning – trice a week, recitation during circle time and transition time.

	Meeting Expectations	Approaching	Beginning
Day 1	TEACHER LED GROUP Activity1 SKILL – READING WITH COMPREHENSION Story-Bug on a rug. Read the story with understanding. Performance task after reading the story- Do the last box activity on the next day as an independent activity.	INDEPENDENT GROUP Activity-1 – SKILL –READING Worksheet – match the words to the pictures. (Read, cut and paste) Activity-2 SKILL – WRITING Roll the dice and write the word.	INDEPENDENT GROUP Activity-1 SKILL –READING Grid –He/She Colour the word He- green She- blue Activity-2 SKILL – LETTER VOABULARY Letter booklet Make a letter booklet with letters written. Let each child draw 2-3 pictures with the letter.
Day 2	INDEPENDENT GROUP Activity-1 – SKILL –READING AND WRITING The last part of the previous day worksheet And Frame sentences. Activity-2 – SKILL – WRITING Roll the dice and write the word.	TEACHER LED GROUP Activity1 SKILL – READING WITH COMPREHENSION Story-Bug on a rug. Read the story with understanding. Performance task after reading the story-	INDEPENDENT GROUP Activity-1 – SKILL –READING Worksheet – match the words to the pictures. (Read, cut and paste) Activity-2 SKILL – READING, WRITING Read the words (Vowel Ee CVC words) and make words with clay.
Day 3	INDEPENDENT GROUP Activity-1 SKILL –READING Worksheet – match the words to the pictures. (Read, cut and paste) Activity-2 SKILL –DECODING READING	INDEPENDENT GROUP Activity-1 SKILL –READING Read to Self- Choose a book of your choice. Read it /flip through the pictures and read the pictures. P.T- Write the title of the story and draw your favourite part of the story. Activity-2 – SKILL –DECODING READING Game -Word puzzle	TEACHER LED GROUP Activity-1 – SKILL – READING WITH COMPREHENSION Story-Bug on a rug. Read the story with understanding. Performance task after reading the story-

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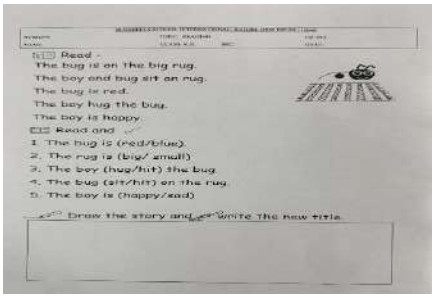
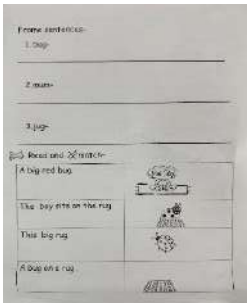
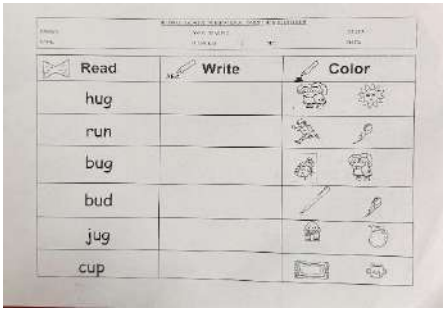






Ex – Story read – Bug on the Rug (Fitzroy Book)

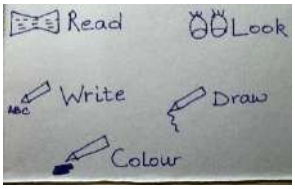
Performance task – meeting group	Performance task – approaching group	Performance task – beginning to group

Step 4 - Organization

- In my class, materials for each literacy center have been allocated to a different space and are clearly labeled colour coded baskets. The material is arranged a day prior to the plan.
- The assigned leader of the group can access / return these materials independently for the group.

Step 5 - Implementation

- In the beginning of the class, a quick recall of the class agreements done with visuals. The teacher goes around and explains the activities of the day to the two independent groups and assigns a leader of the group. (each child gets a chance on rotation)
- We are trying to make them independent in doing their tasks independently with self - explanatory instructions.



- The children transit from one activity to another after completing their first task.
- Students are meaningfully engaged in different activities that are aligned to their levels because of which they remain fully focused on completing their performance task.
- Self-reflection at the end of the class gives us direction for better planning.

Step 6 - Assessment

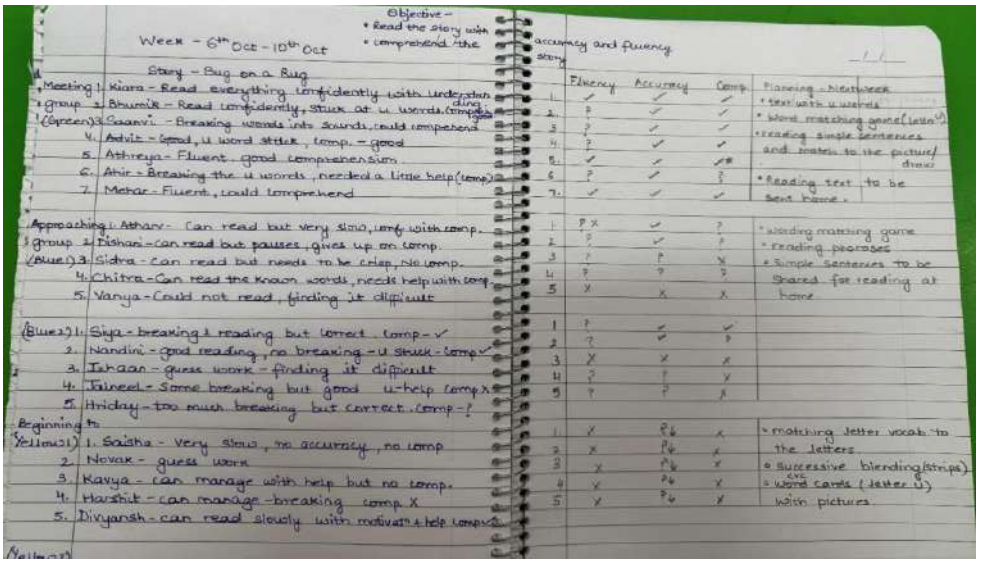
The teacher makes a note of children's work to get an insight of their understanding and plan backwards from the assessment based on respective reading goals. Each group's performance tasks are thoughtfully designed on a weekly basis.

3. Observation and Evidence

- There were initial teething problems for children. They took time to adapt to the class

agreements, following instructions, doing the activities independently, keeping the noise level under control, keeping their focus on the activity for longer time and transitioning from one activity to another. To overcome this challenge we did mock to help them familiarise with the whole process.

- As a teacher it required a lot of time, efforts, patience and resources to plan tailor made activities for each group and to make the whole process effective and smooth for children. Regular self-reflection was needed to cater to each child's needs.
- There were many AHA! Moments and unexpected treats during our journey. To our delight the leaders of the group were very responsible and diligent to the role assigned to them. Also, children's independence and following the class agreements came as a pleasant surprise.
- On the basis of my daily observation of the literacy centres we are share the performance tasks and our observations which helped us to work on different skills LSRW.



Sept		
Meeting	Approaching	Beginning
AAVIR NANDA	DEVYANI SINGH	AANVI NAGAR
ANGAD SONI	HRIHAAN DAS	ABEER VASANTH
KRISH SWAMI	MISHIKA KAPILA	AGASTYA JOSHI
RUDRA DHAKATE	PADMANABH KALITA	ARAINNA NAAGAR
	SHAURYA MITTAL	HITAKSHI
	VANYA AGARWAL	JASMAIRA
		JISHA NAYAR
		MANVI YADAV
		NEHA KUMARI
		REYANSH SINGH
		RIYANSH KALYANI
		RUHANI SHARMA
		SAHIL NEGI
		SARTHAK KUMAR
		SASHA SULTANPURI
		SIDDHARTH MAHAR
		VISHRUT SHARMA
4	6	17

Nov		
Meeting	Approaching	Beginning
AAVIR NANDA	AGASTYA JOSHI	AANVI NAGAR
ANGAD SONI	ARAINNA NAAGAR	ABEER VASANTH
DEVYANI SINGH	JASMAIRA	HITAKSHI
HRIHAAN DAS	JISHA NAYAR	MANVI YADAV
KRISH SWAMI	PADMANABH KALITA	NEHA KUMARI
MISHIKA KAPILA	REYANSH SINGH	SARTHAK KUMAR
RUDRA DHAKATE	RIYANSH KALYANI	SASHA SULTANPURI
SHAURYA MITTAL	RUHANI SHARMA	
VANYA AGARWAL	SAHIL NEGI	
	SIDDHARTH MAHAR	
	VISHRUT SHARMA	
9	11	7

Evidence – data chart

- The Pattern Noted - A large number of children improved their skill levels.
- Many moved up one level, especially from Beginning → Approaching.
- Several made strong gains, moving from Approaching → Meeting.
- Fewer children remained in the Beginning stage, showing successful learning interventions.

5. Reflection and Learnings

a. Insights about Our Students

Students are greatly benefitted as they do activities as per their readiness. In the process they have gained confidence, show interest, actively participate, and have built their peer learning and social skills. Language is no more an alien thing for them and they are learning without being compared to the children in class and no judgements by teachers. For them the learning space is happy and comfortable.

b. Insights about Our Teaching

As a teacher we are able to track each child's progress effectively in small groups. We could share our detailed observations and suggest simple activities for parents to follow up at home. It has helped us to connect with our students at a personal level too. We discovered what excites our children — phonics games, flash cards, hands on interactive games and reading groups give ongoing, informal assessment data — helping us adjust future plans based on real classroom observations, not just worksheets.

Based on this years' experience and observations, we will also make heterogeneous groups. Increase the duration of the class. Start early from the beginning of the session. We will make a simplified version of the graded class text for the lowest group.

6. Relevance

This approach gives a practical and real insight of literacy groups. The teacher adopting this approach will be able to cater to different literacy needs of children, which will bring improvement in child's performance at his/ her own pace. Classroom-based evidences shows what works in a real kindergarten context, not just what's written in books.

It includes the materials that can be used, pedagogy and their implementation for a successful literacy programme.

Our observations can help the other teachers understand their diverse learners and how reading groups support children with different abilities, languages, or interests. Our findings can help the teachers improve their teaching methods and encourage reflective practices.

GENIUS HOUR APPROACH TO TEACH A PLAY

Sreevidya M

Sri Kumaran Children's Home

Sample Size: 35

1. Introduction & Rationale

Teaching drama has always excited me as a teacher, and I constantly explore creativemethods to bring it alive for my students. I noticed that when a play was taught like a regular comprehension passage, it lost its charm and students showed disinterest. So, to make learning more engaging and meaningful, I decided to adopt the Genius Hour approach, a learner- centred strategy that empowers students to explore content based on their curiosity, prior knowledge, and personal interest. Using this approach with my Class 9 students, I designed a series of activities to teach the play The Bishop's Candlesticks. This not only increased them involvement but also encouraged deeper understanding and ownership of their learning.

2. Intervention Strategy

The students were divided into groups according to their interests - role play, quiz, music, graphic organizers, and art. For one week, the last ten minutes of each English period were set aside for them to brainstorm and develop their ideas. Each group was required to submit an abstract outlining their proposed presentation. It took an additional two weeks for all the groups to prepare and present their activities.

3. Observation and Evidence

a. What did I notice?

Initially, the class was quite chaotic, and a few students struggled to cooperate with their groups. Two students volunteered to draft the script for the role play, which required time to compile and refine. The group working on the mind map found it challenging to accommodate all the key elements of the play, but with the help of digital tools, they eventually managed to organise the content effectively. The music group faced challenges in converting the play into verse form and setting it to a suitable

rhythm, particularly when coordinating the instruments to match the tune. Finally, they decided not to use any musical instrument but to give the beats on the desk. The students who created the comic strip struggled to condense the script effectively. However, once each group gained clarity about their task, they settled into focused work and were able to present their activities over the following two weeks.

b. What challenges were faced during the study?

The main challenge I faced was planning and executing the activities while keeping the students' interest alive. Completing everything within the planned duration became difficult, especially when other school-related tasks arose.

Step for improvement- I should enquire about the dates of other school activities in advance and plan the duration of my activity accordingly. It would also be helpful to display a summary of the play in the classroom for easy reference.

Activities	**Evidence collected**
1.Role play	Photographs, video
2.Quiz	Photographs, video
3.Music	lyrics and photographs
4.Graphic organizer	Canvas link
5.Art	Comic strip
6.Feedback	Feedback form written by students

5. Reflection & Leanings

a. What did I learn?

My students were enthusiastic about forming groups based on their interests and choosing the type of activity they wanted to create. Teamwork was challenging for them, yet some groups managed to divide tasks effectively and collaborate smoothly. In contrast, a few groups struggled because certain students tried to impose their ideas which affected the group's coordination, and slowed their progress. However, one positive outcome was that every student read the entire play in order to complete their activity, which made teaching the text much easier for me. In the future, I plan to introduce awards for groups that adhere to deadlines, as this may motivate them further. A feedback form was also given to each group, allowing them to reflect on and share their experience.

6. Relevance

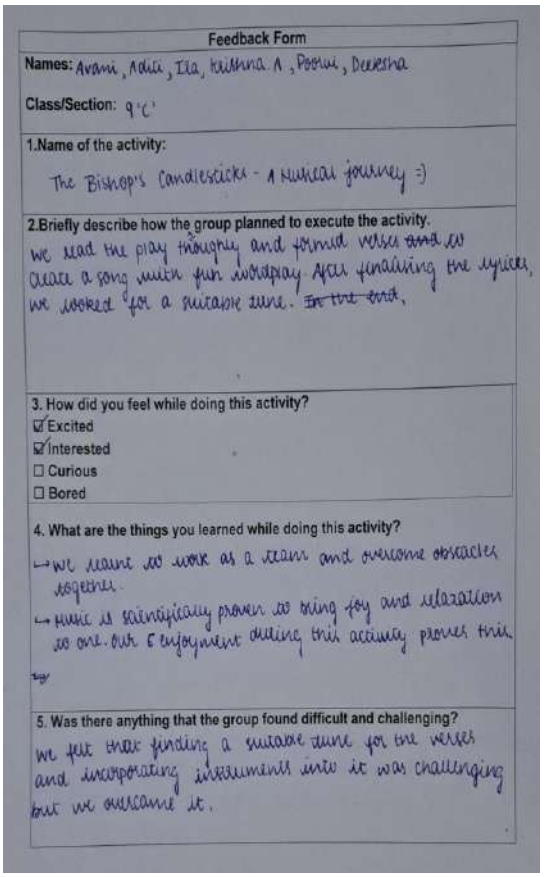
The Genius Hour approach can be effectively integrated into any subject. Creative strategies such as role play, quizzes, and music can be used to teach concepts in Mathematics, Science, and Social Science. Incorporating such student driven activities not only deepens understanding but also sparks curiosity and sustained interest in the subject.

7. Reference Materials & Data Evidence

a. Mind map of the play created by students using canva

https://www.canva.com/design/DAGvNpTRqek/zB4pb6dOBvA8Zr9ZWvnlGQ/view?utm_content=DAGvNpTRqek&utm_campaign=designshare utm_medium=link&utm_source=viewer

b. Feedback form



Feedback Form

Names: Avani, Aditi, Ila, Krishna A, Poorvi, Deeksha

Class/Section: 9 'C'

1.Name of the activity:

The Bishop's Candlesticks - A Musical journey :)

2.Briefly describe how the group planned to execute the activity.

We read the play thoughly and formed verses ~~and~~ to create a song with fun wordplay. After finalising the lyrics, we looked for a suitable tune. ~~For the end.~~

3. How did you feel while doing this activity?

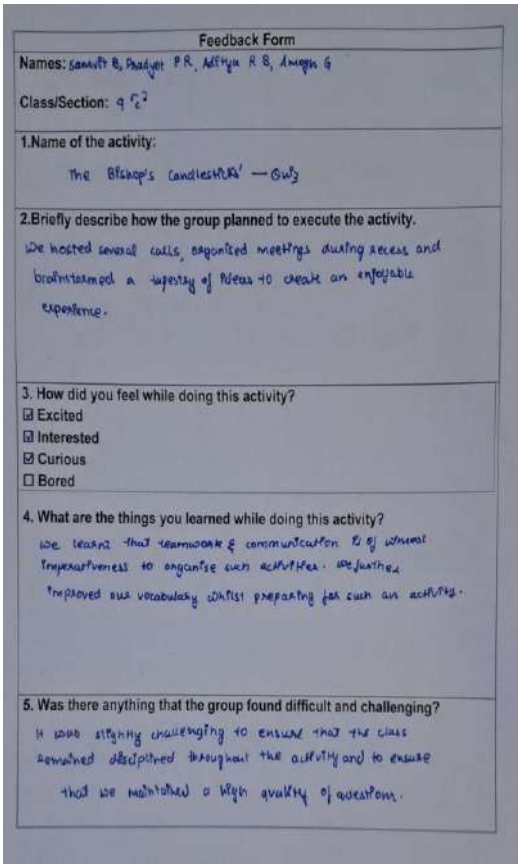
☑ Excited
☑ Interested
☐ Curious
☐ Bored

4. What are the things you learned while doing this activity?

→ We learnt to work as a team and overcome obstacles together.
→ Music is scientifically proven to bring joy and relaxation to one. Our enjoyment during this activity proved this.

5. Was there anything that the group found difficult and challenging?

We felt that finding a suitable tune for the verses and incorporating instruments into it was challenging but we overcame it.



Feedback Form

Names: Samvit B, Pradyot P R, Adityn R B, Anagha G

Class/Section: 9 'C'

1.Name of the activity:

The Bishop's Candlesticks' — Owly

2.Briefly describe how the group planned to execute the activity.

We hosted several calls, organised meetings during recess and brainstormed a tapestry of ideas to create an enjoyable experience.

3. How did you feel while doing this activity?

☑ Excited
☑ Interested
☑ Curious
☐ Bored

4. What are the things you learned while doing this activity?

We learnt that teamwork & communication is of utmost importance to organise such activities. We further improved our vocabulary whilst preparing for such an activity.

5. Was there anything that the group found difficult and challenging?

It was slightly challenging to ensure that the class remained disciplined throughout the activity and to ensure that we maintained a high quality of discussion.

c. Key Patterns or Trends

Role play-The students enjoyed doing the act and used props available in class. After the act I told them that they could have made simple props to spice up the play.

Quiz-The class was excited to solve the crossword puzzle. It was interactive and students presented it confidently.

Song-The students sang to the best of their ability. They used the desk to give the beats as they couldn't synchronise using a musical instrument.

Mind map and cartoon strip- The team initially struggled to summarise the content for the mind map and comic strip, so I guided them through the process. With that support, they soon gained confidence and completed their tasks successfully.

IMPLEMENTATION AND IMPACT OF ACTIVITY BASED LEARNING (ABL), CONCEPT APPLICATION PROJECTS AND SIMULATION LABS IN BUSINESS STUDIES CLASS FOR GRADE 12 STUDENTS

Ms. Smita Srivastava

GEAR Innovative International School

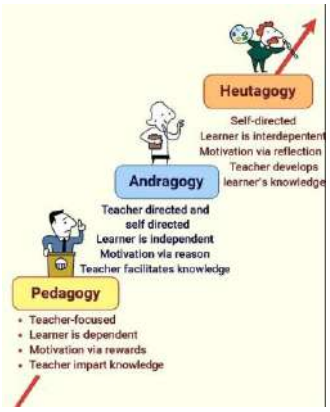
Sample Size : 30

1. Introduction

Business education is incomplete without the application of concepts in real life scenarios. Activity based learning gives this opportunity to create tasks, situations, games, drama, quizzes, simulation labs, etc, to enhance the understanding of classroom lectures and increase the interest of students in the topic.

Some theoretical concepts of Business Studies subject, like various Principles of Management or the impact of Business environment on strategic decisions in an organisation, or Marketing philosophies are difficult for students to relate to. In terms of understanding and retention of concepts it is much easier for students to learn to apply them in real life scenarios. The case studies approach is the norm in business education in most cases though it is not a hands-on approach where students can be creative and devise their own strategies and apply critical thinking to various given scenarios.

The concept of pedagogy is attributed to *Johann Friedrich Herbart*. The theory of andragogy (adult learning) was developed by *Malcolm Knowles*, who outlined its principles based on self-directed adult learners. Heutagogy (self-determined learning) was later introduced by *Stewart Hase and Chris Kenyon* as an extension of andragogy, where the learner determines their own learning path, content, and process.



Pic-credit: Linked In

As a mentor (teacher) for Business Studies I have always been curious to know the impact of classroom lectures on the understanding level of students. Hence, I adopted the strategy of first taking up a topic as a classroom lecture through support material like slides or videos and then following it up with an activity. This would be followed by a worksheet where students will answer the questions and record their observations and experiences. This helped me analyse the impact of ABL on increase in knowledge levels in my class.

2. Intervention Strategy

Samson, Agatha. (2014), National Open University of Nigeria, Abuja, in her research paper- Activity Based Learning: A Successful Model for Business Education, says- *Activity-based learning model is a cognitive-learning model which is considered a "constructivist" learning theory, especially; a learner "constructs" his own small version of knowledge from past knowledge and/or current experiences and interacting with data or information.*

This study reveals that ABL (Activity Based Learning) is one of the best ways of learning and teaching especially in business education since it is built on the rationale that students learn best when they do or are involved in action. And this can be successfully applied in Business education.

Being a firm believer in activity-based learning myself I adopted the strategy of giving a simulation setting for application of the concept in the form of role-playing projects, activities, worksheets, and presentations. The whole idea was to appreciate the concept taught in the classroom in real life scenarios. For this I did primary research in my class. As seen in the survey, done in grade 12 children, upon asking how much an activity helps to retain the concept (Q3), about 30% said a lot and 53% said a fair amount. Around 63% students believe that doing an activity or experiment significantly increases their interest in the concept (Q4).

Doing activities also increases their engagement in the class significantly as seen in response to (Q6). Further around 50% students felt it helps them connect with the real world(Q8)

The strategy I adopted was to first introduce the concept in class through lectures and slides and then follow it up with an activity, project, case study analysis or discussion. This was implemented throughout the first term in my Business studies classes for grade 12, and till the portion completion in term 2 also.

The prominent activities among these were the Business Planning Lab, Simulating Organisation structure and project management exercise for application of Henry Fayol's Principle, The Cookie

Factory challenge- Controlling in action, Application of Marketing philosophy for product design and Marketing. The main purpose of activity-based instructions in contrast to traditional teaching method is to change the focus from delivery of the content by the teacher to the students and active interaction.

3. Observation and Evidence

The student engagement increases significantly while doing an activity and leads to a lasting impact on students, more than 50% believed that (Q10). Around 80% of the class believed that working on activities is a huge motivator, slight or huge (Q12).

However, a downside of the activity-based learning was students finding it challenging to manage their time and stay on track (50%), while around an equal number of students said that they found it challenging to understand project's requirements and collaborating with their team mates.

Another observation was that children though find ABL interesting and an aid to learning, they do not want it to be a replacement of the traditional lecture method(Q13).They have found the methodology helpful- around 23% felt it significantly increases their academic performance and 50% believed somewhat increase in academic performance (Q14).

4. Reflections and Learnings

- The biggest learning from this approach is that even the weakest of students starts to show interest and gets involved in the subject. In my class I observed a couple of students who were doing academically not so well in their first Unit test started to show significant improvement in their marks by the end of first term.
- Working in teams created an atmosphere of peer learning in the classroom as the knowledge gap was smaller and naturally they helped each other.
- The children started looking forward to the activity classes. An informal atmosphere where children were free to sit wherever they wanted, on the floor or on benches, also helped ease the pressure of learning and made it an enjoyable time for all.
- Every activity was followed by a worksheet that helped the students document their learning and retain the information for long.
- It also created an atmosphere of healthy competition in the class as most of the activities were team activities and each team tried to better the other in their analysis and observation. They would ask me to grade them and announce the winners after each activity.

5. Relevance

I believe Activity Based Learning for business education is extremely relevant to all my fellow teachers. Together, we can help alleviate this general feeling amongst students that Business Studies is a very theoretical, boring subject. My study goes on to prove how a purely theoretical subject can also be made interesting for the students of grade 11 and 12 if we include activity-based learning and try to spice up dry lectures with fun activities and projects for the students. With a little bit of imagination and support from Google or generative ai, interesting activities can be generated for every topic in the course structure. The idea is to customise this support as per the requirements of varied students in the

classroom. By carefully planning the activity and following it up with a relevant observation sheet or worksheet, the students' can be impacted in the long run.

References and Data Evidence

Documentation: Some examples of the activities conducted for grade 12 Business Studies students in the current academic year 2025-26.

a. Activity 1- Building a Business Planning Lab

Intent of the activity:

- To help students understand planning as a function of management.
- To identify and differentiate between types of plans: Objectives, Strategy, Policy, Procedure, Rule, Programme, Budget.

Execution:

The students were given 4 different scenarios - A startup for eco-friendly stationery products, A fast food restaurant with vegan menu, A clothing store creating online presence, A mobile app for online tutoring. Each team was assigned a scenario.

The students were given a worksheet where they had to do planning for their assigned scenario and write all the 8 plans- objectives, strategy, policies, procedures, methods, rules, programs and budget.

The assessment was done based on compliance to the scenario assigned, realistic plans and devising the correct plan under that head.

Learning Outcome: Making their own plans for each of the areas for a particular business helped them understand the various plans as well as differences between each.

b. Activity 2- Application of Henry Fayol's Principles of Management- Role Play

Intent of the activity: Understand the application of Fayol's people management theory in an organisational setting.

Execution:

- Students were given a realistic scenario, such as planning a company picnic, a product launch, or a fundraising campaign for a fictional organization.
- Team Formation: Students were divided into teams, assigning each team a different aspect of the scenario (e.g., logistics, marketing, finance).
- Role Assignment: Within each team, specific roles were assigned (e.g., team lead, manager, task specialist).
- The teams worked on their assigned tasks, following Fayol's principle
- Presentation & Discussion: After a designated time, have each team present their plan or project outcomes, highlighting how they applied the principles.
- Debriefing: Facilitating a discussion about the challenges and successes encountered, linking them to Fayol's principles.

Learning Outcome- Students as a team took various roles in an organisation and enacted them. This was very entertaining and learning happened in a fun way. This simulated project approach provides a dynamic and engaging way for students to understand and apply Fayol's Principles of Management.

c. Activity 3- Application of Marketing Philosophies for Product Development

Intent of the activity: To understand the basic concepts which give rise to different Marketing philosophies, to help appreciate the application of various marketing philosophies in real time product development

Instructions to children:

- Pick any 3 products of your choice from the list provided, belonging to from the different categories- FMCG. Consumer durables, Industrial products and services
- Task: Apply different philosophies to each of the chosen products to create a unique brand and develop a communication campaign highlighting the chosen philosophy.
- Presentation: Each team will design their campaign on a chart paper and present it to the class.

Learning: Knowing the kind of philosophy an organisation goes for helps them to decide their product and communication strategy. It brings about creative as well as practical aspects of the product. Children came up with many creative ideas which they presented on a chart paper. Designing a new product was challenging as well as good learning of various aspects involved.

d. Activity 4- The Cookie Factory Challenge- Control in Action!

Intent of the activity: To help students understand how the controlling function of management ensures that actual performance aligns with planned performance and to apply the steps of controlling in a real-life scenario.

Instructions to children:

- Step 1 – Divide into Teams: Divide the class into groups of 4–5 students. Each group will act as a production team in a 'cookie factory'.
- Step 2 – Set Performance Standards: Teacher gives targets: Produce 20 paper cookies in 5 minutes, each 5 cm round and neatly decorated, minimising paper waste.
- Step 3 – Measure Actual Performance: After 5 minutes, teams submit their cookies. Count total cookies, quality, and waste.
- Step 4 – Compare with Standards: Record actual vs. set performance on a table and note deviations.
- Step 5 – Analyse Deviations: Discuss possible reasons for differences – lack of planning, coordination, or tools.
- Step 6 – Take Corrective Action: Teams plan improvements and repeat the process for better results.
- Step 7 – Class Discussion: Discuss how controlling helped improve performance and relate it to real business situations.

Extension: Students are given a worksheet where they record the observation and answer reflective questions.

Learning Outcome: Making the cookies out of newspaper and then bettering their own outcome helped them learn how control methods are adopted in an organisation and they also learnt working in teams and leadership skills.

WORKSTATIONS IN PRESCHOOL: BUILDING INDEPENDENCE AND ENGAGEMENT

Ms. Pratibha Abrol

Bluebells School International

Sample Size: 26

1. Introduction & Rationale

As a preschool educator, I have always been fascinated by the way young children learn — through play, repetition, and curiosity. My classroom was full of excitement, but I often struggled to channel that energy into focused, independent learning. Some children were constantly seeking my help, while others waited passively for directions.

This imbalance made me question my classroom structure. I wanted every child to feel capable and responsible. That led me to explore a new approach — **Workstations**, where the class is divided into smaller, mixed-ability groups, each engaging in meaningful, hands-on activities designed to foster independence and active learning.

Question in mind – *But, how do workstations influence independence, engagement, and self-regulation among preschool learners?*

2. What Led Me to This Research

The idea was born out of small but daily classroom challenges:

- Children depending too much on me for small decisions.
- Unclear transitions between activities leading to confusion.
- Different learning paces — fast finishers got restless while others lagged behind.
- Limited individual attention, especially in a large group.

The trigger came during a free-art activity when half the class painted happily while others wandered around unsure of what to do. That day I asked myself — What if children had more ownership over their learning spaces? This curiosity sparked my journey into using Workstations to promote independence and engagement.

3. Intervention Strategy

a. Planning the Strategy

I began by dividing my class into **heterogeneous groups** — ensuring a mix of personalities, abilities, and interests. Each group had its own table labeled with the children's names, allowing them to sight read and independently locate their place each morning.

To make transitions smoother, I introduced:

- Organized baskets for each activity.
- Visual picture cues for non-readers (e.g., paintbrush for Art, books for Literacy).
- Soft bell to indicate wrap-up or move time.

I designed a **daily rotation plan** so that every child experienced all stations during the day. Each workstation was intentionally play-based, hands-on, and linked to developmental goals.

b. Workstations and Activities

Station	Focus area	Activities	Skills developed
Language & Literacy	Early reading & communication	Sandpaper tracing of letters, story cards, sight reading	Vocabulary, phonemic awareness
Math & Logic	Numeracy & reasoning	Dot cards and peg activity, shape sorting, blocks, jigsaw puzzles	Counting, classification, problem solving
Art & Creativity	Expression & imagination	Free hand drawing, play dough, paper tearing and pasting	Imagination, emotional expression
Fine Motor	Coordination & control	Threading beads, using scissors, pegs	Dexterity, focus, muscle control
Sensory & Discovery	Observation & exploration	Sand play, water pouring, texture board, nature sorting	Curiosity, sensory awareness

Math & Logic Workstation

Language & Literacy Workstation

Art & Fine motor Workstation

a. *Tools and Resources Used*

- Name tags for sight reading and ownership.
- Organized baskets for arranging materials.
- Visual task cards for instructions.
- Bell music for routine.
- Observation checklist to note engagement levels.
- Smiley-face self-check chart for self-reflection.

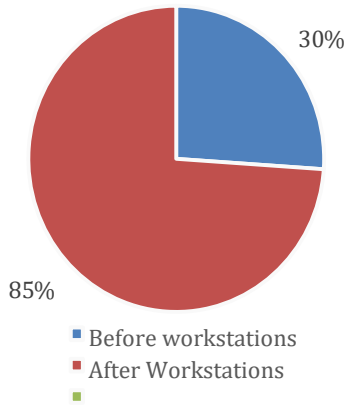
4. Observations, Evidence, and Surprises

After four weeks of implementing workstations, I began to notice real transformation.

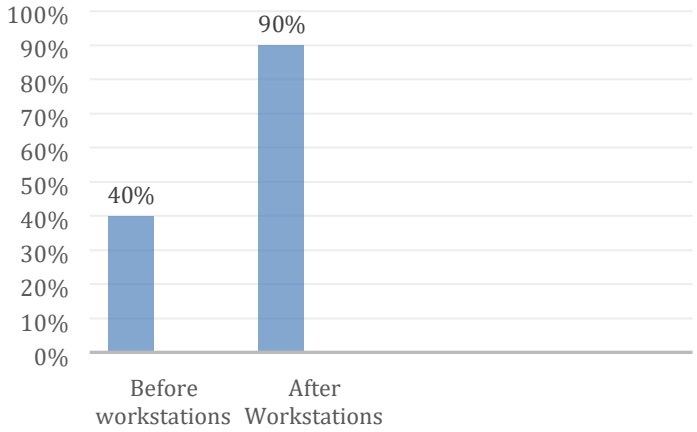
a. *Quantitative Data:*

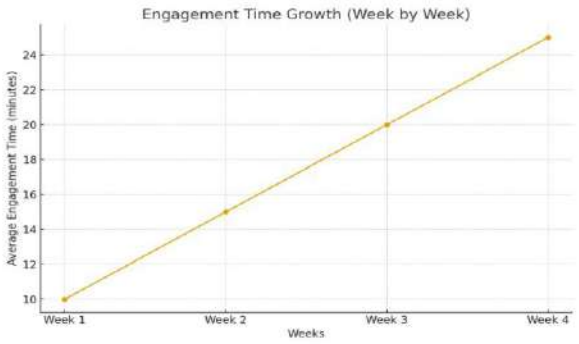
Parameters	Before workstations	After 4 weeks
Children able to independently start an activity	30%	85%
Children able to identify their names	40%	90%
Average engagement duration per child	5-7 mins	12-15 mins
Teacher intervention frequency per group	High	Low

Independent task starters before and after the workstations



Increase in Sight reading of names and letters





- Looking at the data, it's clear that the most significant factor contributing to the improvement in sight reading of names, increased engagement duration, and greater independence was the consistency of routines and the way workstations were structured. The children had more control over their learning, which encouraged them to engage more deeply with their tasks.
- Independence grew because they were given ownership of their space and materials, and with regular, predictable routines, they felt more confident in their abilities. I also noticed that as the children became more accustomed to the workstations, they began to take more initiative and didn't rely on me for constant direction.
- The engagement duration doubling was a pleasant surprise — I believe it was due to the self-

paced nature of the stations. Since the kids had the freedom to choose activities that interested them, they were more likely to stay focused and enjoy their learning.

- What surprised me most was how quickly they took to the responsibility of managing their work and space, and how this fostered a deeper connection to the activities, far beyond what I initially expected. It really highlighted the power of giving them autonomy.

a. *Children's Voices:*

- "I found my name by myself!" — Vaanya
- "I can do it without asking!" — Shanvi
- "This is my table; I keep it clean." — Yuvraj
- "We are waiting for the music to change; then we go to blocks!" — Veda

b. *Surprises:*

- Quiet children emerged as leaders.
- Peer learning happened naturally.
- Reduced behavioral issues.
- Purposeful classroom noise and collaboration.

5. Reflection

Introducing workstations in my preschool classroom brought both **successes and challenges.**

- One thing that didn't work as smoothly as I hoped initially was the transition time between activities. Children sometimes struggled to clean up quickly or move from one station to another, causing disruptions and a loss of focus. I redesigned the routines to incorporate more visual cues / time markers and thoughtful selection of workstation activities to help children manage these transitions independently.
- Some activities viz. silent reading time / picture reading did not fit well in the workstations. For this, I started practicing these activities with them in larger groups. I gave them step by step breakup of doing these activities more productively. Tweaking the environment and routine to cater to the needs of children is key to smoother functioning of workstations.
- Workstations reshaped not only my classroom structure but also my teaching mindset.

The children developed pride in their spaces and learned to take responsibility — for their materials, their work, and their behavior. The system also gave me space to observe, document, and celebrate small progress.

6. Relevance for Other Educators

Workstations are a flexible model any preschool educator can adapt.

a. *Why it works for teachers:*

- Simplifies classroom management.
- Allows differentiation — each child learns at their level.
- Encourages peer collaboration and self-regulation.
- Reduces teacher burnout.

b. Practical Tips:

- Start small — maybe two stations first.
- Use low-cost materials.
- Keep instructions visual and predictable.
- Rotate groups gradually.
- Celebrate effort, not perfection.

7. Conclusion

My journey with workstations began as an attempt to manage classroom chaos but evolved into a powerful teaching approach that nurtures independence, engagement, and confidence.

Today, my classroom feels more balanced — every child has a place, a task, and a sense of pride. Workstations remind me daily that children are capable of so much more when we give them the opportunity to take charge of their learning.

RESTORING CHILDHOOD: SUPPORTING HARSHA, AN ADHD LEARNER, THROUGH REBELLIOUS BEHAVIOUR AND SUICIDALITY

Ms. Priya Darshini

Indus Valley International School

Sample Size: 1

1. Introduction & Rationale

A Child in Crisis

When Harsha arrived in Grade 7, he carried a heavy burden. Having moved through four schools already, his parents were exhausted and fearful. Each school had viewed him as "a problem" rather than a child with a problem. By the time he reached Grade 8, the complexity of his Attention Deficit Hyperactivity Disorder (ADHD) manifested not just as inattention and incomplete work, but as profound rebellious behaviour and terrifying suicidality. He would make self-deprecating remarks and references to death, signaling a deep emotional pain that demanded immediate, dedicated attention. He wrote stories of his death in series.

The Motivation to Transform

As Principal, I felt a deep responsibility to move beyond the punitive cycle that had previously failed Harsha. The motivation was not merely to manage his behaviour, but to restore his childhood—to create a space where he felt safe enough to learn, connect, and thrive.

The rationale was simple: we needed to prove that when academic structure is wrapped in unwavering emotional support and safety protocols, a student's entire trajectory can be changed. We committed to designing a practical, integrated intervention that centered on compassion, collaboration, and consistency.

2. Intervention Strategy

a. Structure and Heart

Our strategy was built on the belief that behaviour is communication. We combined firm structure to manage the ADHD symptoms with deep empathy to address the suicidal ideation and rebellion.

This involved three integrated pillars:

- Classroom Re-engineering: Tailored supports focused on Harsha's executive function deficits.
- Safety First: Establishing robust emotional support and non-negotiable safety measures at home and at school.
- Team Harsha: Immediate engagement with external professionals (psychologist and handwriting expert),
- His teachers, His Classmates, Head mistress, School education counselor and his dedicated parents were all made ready to address the issue that's bothering the child.

3. Planning and Implementation

a. Building Predictability

- **The Individual Support Plan (ISP):** We scrapped the idea of "punishment" that the parents and others took to and drafted an ISP focused on **clear, kind communication** of expectations and the immediate use of **positive reinforcement**.
- **A Safe Space:** Harsha's seating was adjusted away from the main flow, and instructions were broken into **small, digestible steps**—we were teaching him *how* to pay attention, not just expecting it.
- **Mindful Movement:** Short, planned movement and mindfulness breaks were integrated into lessons, acknowledging his physical need to move and reset.
- **The Trusted Mentor:** A teacher-mentor system was set up, giving Harsha a **safe harbour**—a trusted adult he could speak to without fear of judgment about his feelings or any dark thoughts. This relationship was the bedrock of his emotional safety.
- **Partnering with Parents:** We maintained regular, open-hearted meetings with his parents, ensuring that home and school were aligned, finally creating a **consistent, supportive world** for him.

b. Tools / Activities Used: Simple, Consistent Support

- **Visual Aids:** Simple visual timetables and task lists gave him external control over his day.
- **Tracking Progress, Not Failures:** Simple daily tracking sheets focused on attention and success, rather than counting mistakes.
- **Restorative Reflection:** After incidents, we used reflection sheets (**"What was I feeling? What do I need next time?"**) to help him connect his emotions to his actions and practice repair.
- **Choice and Control:** Offering small choices (e.g., choice of assignment format) reduced his need to rebel against all authority.
- **Expert Guidance:** We relied heavily on the detailed recommendations from the psychologist and handwriting expert to ensure our efforts were clinically informed.

c. Duration of Intervention

One challenging, but ultimately transformative, academic term (**10–12 weeks**).

4. Observation and Evidence

What We Noticed: When Consistency Won

Initially, the resistance was strong. Harsha would refuse instructions, argue fiercely, and his self-deprecating remarks were constant. He was testing us, checking if we, too, would give up on him.

However, as the routines became unwavering and the adults remained **calm, firm, and kind**, something shifted. His need to challenge us began to dissipate. We observed a clear **reduction in major disruptive incidents** and, crucially, an improvement in task completion. He started using the mentor meetings to talk about his feelings instead of bottling them up until they exploded in the classroom. Harsha began to trust the process and, slowly, to trust himself.

a. Our Challenges

- **Testing Our Resolve:** His rebellious nature was an endurance test for the staff. We had to hold the boundary with consistent kindness, never reacting emotionally to his frustration.
- **Staff Capacity:** The need for constant tracking and prompting was demanding. It required the whole team to commit extra time and coordinate seamlessly.
- **Carrying the Weight:** Managing the high risk of suicidality required creating a clear, caring protocol on the fly, adding a layer of emotional weight to every adult involved.

b. The Evidence of Hope

- **Behaviour Logs:** Data confirmed a significant downward trend in severe incidents, validating that the structure was working.
- **Academic Gains:** Handwriting samples showed a modest but meaningful improvement in legibility—a small sign of his ability to regulate himself.
- **The Psychologist's View:** Feedback confirmed that the school's stable and compassionate presence had become a **critical protective factor**, reducing his overall emotional vulnerability.

5. Reflection & Learnings

a. The Power of Being Seen

This case strongly affirmed that true student learning behaviour is rooted in **emotional safety**. Harsha needed to be **seen** as struggling, not as bad. He responded when he had the chance to repair his mistakes and when he felt the support was consistent and non-judgmental. He taught us that when the environment feels safe, the need to push back fades.

b. Core Learnings for the Future

We learned that relying on classroom management alone when suicidality is present is insufficient. Our future work must prioritize:

- **Proactive Crisis Planning:** Developing a clear, predefined crisis response and referral protocol *before* a student is in distress.
- **Empathy Training:** Orienting all staff on the nuances of ADHD, adolescent mental health, and respectful, non-escalatory de-escalation.
- **Early Intervention:** Starting individual support planning and family collaboration the

moment a flag is raised, preventing difficult patterns from becoming entrenched.

6. Relevance

A Blueprint for Compassion

This study is immensely relevant to every educator struggling with complex student behaviours. It offers a human blueprint for transforming a high-risk scenario through commitment, collaboration, and a shift in perspective.

The strategies we used—from movement breaks to mentoring—are low-cost and adaptable. They provide a tangible model for school leaders to engage in practitioner research, framing difficult cases as opportunities for profound positive change.

Harsha's journey invites every educator to look past the label of "rebellious" and ask the fundamental, human question: What is this child trying to tell us about their needs? Sharing this experience affirms the power of school leadership to restore not just academic paths, but a student's fundamental hope for the future.

ENHANCING STUDENT ENGAGEMENT AND REFLECTIVE LEARNING THROUGH INTEGRATED LITERATURE-BASED ACTIVITIES AN ACTION RESEARCH STUDY

Ms. Sonali Banerjee

GEAR Innovative International School

Sample Size: 44

1. Abstract

This action research study investigated pedagogical techniques aimed at enhancing student engagement, reflective thinking, and active participation among Grade 12 students in English classes. Working with 44 students across two sections (12 and 32 students), the study implemented integrated pre-lesson, introductory, and post-lesson activities centred on literary analysis. Students engaged with texts including *"Deep Water" by William Douglas, "The Rattrap" by Selma Lagerlöf, "Keeping Quiet" by Pablo Neruda, and "A Thing of Beauty"* by John Keats. Data collection included visual presentations, research-based argumentative essays, student reflections, independent research projects, and classroom observations. Findings demonstrate that structured analytical activities connecting literature to broader human experiences significantly increased student engagement, deepened understanding, and developed higher-order thinking skills. Notably, analytical and reflective practices developed through literature study transferred to independent research projects in non-literature domains, with students demonstrating sophisticated research design, data analysis, and reflective metacognition when investigating contemporary issues such as urban congestion and commute-related stress. This research offers practical insights for English educators seeking to transform disengaged learners into active, reflective participants who develop generalizable intellectual competencies applicable across disciplinary boundaries.

2. Introduction

a. Context and Problem Statement

Teaching English literature to Grade 12 students presents significant challenges in contemporary educational settings. The participating students in this study face extraordinary pressures: they spend more than four hours daily commuting across multiple coaching classes for college entrance examinations, leaving them emotionally and mentally exhausted. Many arrive at English classes with minimal interest, frequent absences, and apparent indifference to literary study.

Adding to these constraints, the academic calendar in Indian schools is dominated by pre-board examinations and national board exams, creating compressed timelines for instruction and assessment. Teachers must navigate the tension between implementing meaningful, time-intensive pedagogical approaches and covering curriculum content to prepare students for standardised assessments. Despite these temporal constraints, this study demonstrates that even abbreviated engagement with multi-modal analytical activities produces measurable gains in student engagement and higher-order thinking.

This phenomenon of time-pressured, exhausted learners is not unique to this institution but reflects a widespread challenge in secondary education, particularly in competitive academic environments where standardised testing dominates the curriculum. The fundamental question that prompted this research was: **How can we transform this disengagement into genuine curiosity and meaningful participation, even within the constraints of an examination-focused academic calendar?**

b. Research Questions

This study addressed the following research questions:

- How can structured analytical activities focused on character and thematic analysis enhance student engagement with literature?
- What is the relationship between varied pedagogical approaches (visual, written, collaborative) and the development of higher-order thinking skills?
- How do reflective writing practices deepen students' understanding of literature's connection to human experience?
- To what extent can teachers create meaningful learning experiences that compete with external stressors and academic pressures?
- How do analytical and reflective practices develop through literature study transfer to independent research projects in other domains?

c. Significance of the Study

While extensive literature exists on pedagogical innovation, this study contributes practical, classroom-tested strategies for transforming reluctant learners into engaged participants. The research demonstrates that when literature is presented through multi-modal, analytically rigorous, and personally meaningful activities, even time-pressured students demonstrate remarkable enthusiasm and sophisticated thinking.

3. Literature Review

a. Student Engagement in Secondary Education

Student engagement represents a multidimensional construct encompassing behavioural, emotional, and cognitive dimensions. Fredricks, Blumenfeld, and Paris (2004)—educational researchers from the University of Michigan and Connecticut College specialising in motivation and student engagement—define behavioural engagement as observable participation, emotional engagement

as the student's affective response, and cognitive engagement as the level of mental effort invested. Their seminal article in the *Review of Educational Research* has become foundational in understanding how engagement operates across these three dimensions. Research consistently demonstrates that engaged students demonstrate higher achievement, better attendance, and greater persistence with challenging material.

b. Literature-Based Learning and Critical Thinking

Literature serves as a particularly powerful medium for developing critical thinking and reflective practice. When students engage in analytical activities—character mapping, thematic connection, symbolic interpretation—they move beyond surface comprehension to deeper cognitive engagement.

Bloom's revised taxonomy, developed by educational psychologist Benjamin Bloom and later revised by Anderson and Krathwohl (2001), positions analysis, evaluation, and creation at the higher levels of cognitive complexity. Literature-based analytical activities naturally invite students into these higher-order cognitive domains, particularly when coupled with opportunities for creative expression and reflective synthesis.

c. Reflective Practice and Metacognition

Donald Schön (1983), an influential organisational and educational theorist at MIT, introduced the concept of reflective practice, emphasising the value of deliberate reflection on experience. In educational contexts, written reflections prompt students to examine their own thinking processes, integrate new understanding with prior knowledge, and develop metacognitive awareness. Hatton and Smith (1995), educational researchers at the University of Sydney, demonstrate that structured reflection significantly enhances learning retention and transfer of knowledge to new contexts.

4. Methodology

a. Research Design

This study employed action research methodology, an approach particularly suited to classroom-based investigations of pedagogical innovation.

The study involved 44 Grade 12 students from two class sections:

- Section A: 12 students
- Section B: 32 students

b. Curricular Context

Four primary texts served as the foundation for the study:

- *Deep Water* by William Douglas (autobiographical essay)
- *The Rattrap* by Selma Lagerlöf (short story)
- *Keeping Quiet* by Pablo Neruda (poetry)
- A Thing of Beauty by John Keats (poetry)

These texts were selected for their thematic richness, accessibility to diverse learners, and potential for multi-modal analysis activities.

c. Pedagogical Interventions

The instructional design incorporated three integrated activity types:

Pre-Lesson Activities: Introductory tasks designed to activate prior knowledge and pique curiosity. Examples included thought-provoking questions, visual prompts, and preliminary discussions about themes before text engagement.

Analytical Activities: Structured tasks requiring different modes of engagement:

- Visual analysis activities (character mapping, thematic infographics, timeline representations, mood-colour coding)
- Written analytical tasks (comparative analysis essays, creative retellings, profiling, psychological reflective journal entries)
- Collaborative group presentations on chart paper
- Individual research-based argumentative essays

d. Data Collection Methods

Data were collected through multiple sources:

- **Student Artefacts:** Videos and visual presentations on chart paper, argumentative research essays, and student reflections
- **Classroom Observations:** Teacher notes on student participation, engagement levels, and quality of discussion
- **Student Feedback:** Reflective writing responses and discussion contributions
    - **Engagement Indicators:** Participation rates, quality of analytical insights, depth of textual connection

e. Analysis Procedures

Analysis employed qualitative and observational methods:

- **Artefact Analysis:** Student work was examined for evidence of higher-order thinking (analysis, evaluation, synthesis), textual understanding, and reflective depth
- **Thematic Analysis:** Student reflections were coded to identify patterns in learning experiences and emerging metacognitive awareness
- **Observational Synthesis:** Classroom observations were synthesised to identify engagement trends and participation patterns

5. Findings

a. Evidence of Enhanced Engagement

Observable engagement increased markedly across both sections. Students who typically demonstrated minimal interest in English classes participated enthusiastically in visual and analytical activities. Several indicators supported this finding:

Voluntary Participation: Students who rarely volunteered in traditional discussion-based classes eagerly presented their visual analysis projects and defended their interpretations during group presentations. The shift from passive listening to active presentation transformed classroom dynamics.

Quality of Analytical Work: Character maps, thematic infographics, and visual journey representations demonstrated sophisticated textual analysis. For example, in analysing *The Rattrap*, students created multi-layered visual representations showing the peddler's psychological transformation across specific narrative moments. These visual analyses revealed that students had conducted careful textual reading and extracted a nuanced understanding of character motivation and thematic significance.

Depth of Discussion: Post-presentation discussions revealed students engaging in substantive literary analysis. Students questioned interpretations, offered alternative perspectives, and supported claims with textual evidence—behaviours rarely observed in this cohort during traditional instruction.

b. Development of Higher-Order Thinking Skills

The argumentative research essays demonstrated movement into higher-order cognitive domains. Evidence included:

Complex Thematic Analysis: Essays moved beyond plot summary to analyse abstract concepts like moral relativism, the psychology of fear, human dignity, and the nature of beauty. One student's essay on judging historical figures analysed competing ethical frameworks (moral relativism vs. universalism) with philosophical sophistication, integrating historical examples and contemporary applications.

Psychological and Philosophical Insight: Student work on *The Rattrap* included psychological profiles tracing the peddler's worldview evolution, examining how his "rattrap theory" shaped decision-making. This analysis required students to synthesise textual evidence, psychological theory, and philosophical questioning—high-level cognitive work.

Creative Application: Students extended literary analysis to contemporary contexts. When analysing *Keeping Quiet*, students evaluated Neruda's vision of collective silence in relation to modern digital connectivity, social media, and political polarisation. This required evaluative thinking and transfer of literary concepts to unfamiliar domains.

c. Reflective Learning and Metacognitive Development

Student reflections provided powerful evidence of deepening self-awareness and integrated understanding:

Perspective Transformation: Students articulated how engaging with literature had altered their thinking. One reflection noted: "Before this essay on moral relativism, I viewed history in

black and white. Through exploring how moral principles differ across cultures and times, I learned to extend the same empathy to historical figures that I expect for myself."

Personal Connection to Abstract Concepts: Students moved from treating literature as distant from their lives to recognising its relevance to lived experience. A student reflected on how her grandmother's experience with restricted education connected to concepts of moral relativism and social progress, demonstrating the integration of personal narrative with philosophical analysis.

Metacognitive Awareness: Reflections demonstrated increased awareness of thinking processes. Students described how structured analytical activities—character mapping, timeline creation, comparative analysis—helped them organise complex textual information and trace character development. One reflection explicitly noted: "Creating the visual timeline helped me see how gradually the peddler changed. It wasn't one moment but many small moments. When I just read, I missed those connections."

d. Sustained Engagement Across Content

Notably, engagement remained high across all four texts studied. Students did not demonstrate the typical pattern of initial enthusiasm followed by declining engagement. This consistency suggests that the pedagogical approach itself, rather than novelty, drove engagement.

e. Independent Research Projects: Breadth of Student Inquiry

Recognising the value of sustained research and inquiry, all 44 students undertook independent research projects on contemporary topics of their choosing. This project requirement represented a significant pedagogical innovation, extending analytical and reflective practices beyond literature study into student-directed research.

6. Project Design and Methodology:

Students selected topics, submitted action plans for teacher approval, and then pursued one of three research methodologies:

- **Documentary/Podcast/Reading Approach:** Students engaged with existing multimedia and textual resources, analysing arguments, evidence, and perspectives presented in professional documentaries, podcasts, and scholarly articles.
- **Survey-Based Research:** Students designed original questionnaires, conducted surveys with relevant populations, analysed quantitative and qualitative data, and drew evidence-based conclusions.
- **Interview and Mixed-Methods Research:** Some students conducted interviews alongside documentary research and reading, combining multiple evidence sources.

a. Diversity of Topics:

The breadth of topics students chose reveals genuine intellectual curiosity extending across multiple domains:

- Professional ethics and accountability (engineering ethics; accountability for technological failures)
- Mental health and performance (pressure in athletics; suppression culture in sports; athlete burnout)
- Social and technological impact (social media effects on contemporary society; inflation's impact on food access)
- Gender and opportunity (growth of women's participation in sports)

This topical diversity demonstrates that the analytical frameworks students developed through literature study transferred readily to domains entirely outside literary analysis.

b. Quality of Research and Analysis:

Student essays demonstrated sophisticated research competencies. One student's investigation of engineering accountability integrated three significant case studies—the Citycorp building design crisis, the Boeing 737 MAX crashes, and the Space Shuttle Challenger disaster—to examine the ethical dimensions of professional responsibility. The analysis moved beyond case description to synthesise patterns: engineers save lives through accountability; silencing concerns results in tragedy. The student articulated a nuanced conclusion that accountability must be shared across organisational hierarchies, not concentrated on individual engineers.

Another student researching athletic mental health conducted original survey research capturing 100% participant agreement that team sports improved cooperation skills, alongside more complex findings about emotional regulation. The analysis recognised that while team sports facilitate emotional development, this process is gradual and influenced by individual temperament and team dynamics. The student synthesised research data with documentary evidence and athlete testimony to construct a multi-faceted argument about sport's role in psychological development.

Students investigating suppression culture in athletics integrated statistical data (meta-analyses showing 34% of elite athletes report anxiety/depression symptoms), individual athlete narratives (Michael Phelps, Naomi Osaka, Hayden Hurst), and analysis of systemic factors creating psychological pressure. The research revealed how organisational culture silences vulnerability, creating isolation that compounds mental health struggles.

c. Evidence-Based Reasoning:

Across projects, students demonstrated evidence-based reasoning combining quantitative data, qualitative testimony, and theoretical frameworks. When students' initial assumptions proved inaccurate through data analysis, they revised conclusions rather than forcing data to fit preconceptions. This intellectual honesty reflects mature research practice.

d. Reflective Metacognition on Research Process:

Student reflections on their research revealed sophisticated metacognitive thinking. One student reflected: "Writing this essay made it clear to me that engineering involves more than just construction; it also involves moral decision-making. Before working on it, I primarily believed that engineers were responsible for designing and resolving technical issues. I now

realise that their choices have the power to alter lives, which lends greater significance to their work."

Another student noted: "In exploring the moral aspects of engineering, I learned that ethical challenges faced by engineers go much further beyond their labs and workspaces. They involve needing to be able to respond to pressing deadlines and company stakeholders. These challenges reveal the importance of courage in defending safety and integrity even when it means standing against authority or risking reputation."

These reflections demonstrate that students moved beyond passive data collection to grapple with the ethical and human dimensions of research topics. They recognised how the research process itself—designing questionnaires, analysing data, interpreting conflicting evidence—requires judgment and values-based decision-making.

e. Transfer of Analytical Skills Across Domains:

The independent research projects provided compelling evidence that analytical and reflective practices developed through literature study transferred successfully to research contexts. Students who had engaged in character psychological analysis applied similar frameworks to analyse systemic factors in sports culture or organisational ethics in engineering. Students who had connected literary themes to human experience readily connected research data to lived experience and contemporary challenges. The reflective practice cultivated through literary study enabled students to examine their own thinking as they conducted research, collected data, analysed findings, and drew conclusions.

7. Discussion

a. Mechanisms of Engagement

Why did these pedagogical interventions successfully engage chronically disengaged students? Several factors emerged:

Autonomy and Choice: The variety of activity options (visual representation, creative writing, research, philosophical analysis) allowed students to exercise agency in how they engaged with content. Research on intrinsic motivation by Edward Deci and Richard Ryan at the University of Rochester—leading scholars in self-determination theory—demonstrates that autonomy significantly enhances engagement and persistence. When learners have a choice in how they approach tasks, they develop greater investment in outcomes.

Relevance and Personal Meaning: By explicitly prompting students to connect literature to contemporary issues, family experiences, and personal dilemmas, the activities transformed literature from abstract academic content into a meaningful exploration of human experience. Students moved from "why do I have to learn this?" to genuine intellectual curiosity.

Cognitive Activation: The analytical demands—character psychological profiling, thematic connection, symbolic interpretation—engaged students at higher cognitive levels. Students were not passively receiving information but actively constructing meaning, which inherently produces engagement.

Social Collaboration: Group activities and peer presentations created a community around learning. Literature study became a shared intellectual endeavour rather than an isolated, individual work. The social dimension of presenting to peers and defending interpretations heightened investment in quality thinking.

b. Higher-Order Thinking and Reflective Development

The findings align with constructivist learning theory, which posits that meaningful learning occurs when students actively construct knowledge through engagement with authentic intellectual tasks. When students engaged in character psychological analysis, they necessarily synthesised textual evidence, psychological principles, and ethical reasoning—cognitive work requiring analysis, evaluation, and synthesis per Bloom's taxonomy.

Reflective writing proved particularly powerful. When students articulated how literature had altered their perspectives or connected to personal experiences, they engaged in metacognitive reflection that deepened learning and promoted transfer to new contexts.

c. Pedagogical Innovation Within Systemic Constraints

A particular strength of this research is that it demonstrates meaningful pedagogical innovation within the very real constraints of the Indian secondary education system. Teachers are not advocating for replacing board exam preparation with exploratory learning—an impractical and professionally unfeasible position. Rather, this study shows how to *restructure* existing instructional time to achieve dual goals: rigorous preparation for assessments AND deeper engagement with literary content.

The key insight is strategic trade-offs. Rather than covering 15 texts superficially, students engaged deeply with 4 texts through multi-modal analysis. This depth produced higher-order thinking that actually better serves exam preparation than surface-level coverage. When students understand the psychological dynamics of a character, the philosophical tensions embedded in a text, or the contemporary relevance of a poem's themes, they are better equipped to produce sophisticated written responses under examination conditions.

Furthermore, the visual, collaborative, and reflective elements of this approach require minimal additional resource expenditure. Teachers need no technology, no special materials—primarily thoughtful activity design and facilitation. The time investment is in planning robust analytical tasks, not in adding extra class periods.

This pragmatic approach to pedagogical innovation may resonate with teachers who feel trapped between idealistic educational philosophies and systemic assessment demands. The research suggests that excellence need not be an either/or proposition.

These findings suggest several actionable principles for English educators:

- **Diversify Activity Modes:** Recognise that analysis can occur through visual, written, verbal, and kinesthetic channels. Exclusive reliance on traditional essay writing excludes students whose strengths lie in other domains.
- **Build Explicit Connections to Human Experience:** Literature studies should explicitly prompt students to recognise connections between textual content and lived experience, contemporary issues, and personal dilemmas. This transforms literature from subject matter into meaning-making tools.
- **Provide Opportunities for Authentic Presentation:** Peer presentation and discussion create accountability for rigorous thinking and transform passive engagement into active contribution.
- **Scaffold Reflection:** Structured reflective prompts guide students toward deeper metacognitive awareness. Without explicit reflection opportunities, analysis remains surface-level.
- **Balance Structure with Autonomy:** While activities should have clear analytical goals, students should have choice in how they pursue those goals, which texts/themes they

prioritise, and how they represent their thinking.

d. Limitations and Considerations

This study represents action research grounded in a specific classroom context. While findings are compelling for these students and contexts, broader generalizability requires replication with diverse student populations, subject matter domains, and institutional settings.

Additionally, the study did not employ standardised pre-test/post-test measurement of engagement or critical thinking. Future research might strengthen findings through quantitative engagement measures or validated critical thinking assessments.

8. Implications for Practice

a. For English Educators

This research suggests that even severely time-pressured, exhausted learners can become engaged, reflective participants when instruction moves beyond traditional text-based approaches. Specifically:

- Invest time in designing multi-modal analytical activities that offer varied entry points
- Explicitly connect literature to contemporary issues and personal experience
- Create opportunities for students to represent understanding through diverse media
- Build reflection into the curriculum, not as an afterthought but as central to learning
- Prioritise student agency through choice in analytical focus and representational mode
- Recognise that analytical and reflective practices developed through literature study provide foundational skills transferable to research and inquiry in other disciplines

b. For Curriculum Design

Literature curricula should be reconceived to emphasise analysis and synthesis over comprehension and recall. Curricular frameworks should specify opportunities for:

- Multi-modal representation of understanding
- Connection between textual and personal experience
- Collaborative intellectual work
- Structured reflection on learning processes

c. For Teacher Professional Development

Teachers implementing similar approaches benefit from professional development addressing:

- Design of scaffolded analytical activities
- Use of visual representations in academic analysis
- Facilitation of meaningful discussion and peer learning
- Integration of reflection into daily teaching

9. Conclusion

This action research study demonstrates that Grade 12 students facing significant external pressures and academic demands can become engaged, reflective learners when instruction employs integrated

analytical activities connecting literature to human experience. Through character analysis, thematic exploration, visual representation, argumentative research, and reflective writing, students moved beyond passive comprehension into sophisticated higher-order thinking.

Significantly, the analytical and reflective practices developed through literature study transferred to independent research projects in other domains. Students who conducted research on topics such as urban congestion and commute stress demonstrated the same analytical sophistication, multi-dimensional perspective-taking, and reflective metacognition evident in their literary analysis. This transfer suggests that literature-based analytical instruction develops generalizable intellectual competencies extending beyond literary understanding to research design, data analysis, and evidence-based reasoning.

The research contributes practical, replicable strategies for transforming disengagement into genuine intellectual curiosity. Rather than accepting that time-pressured students cannot meaningfully engage with literature, this study demonstrates that purposeful pedagogical design can overcome external constraints and activate intrinsic motivation.

These findings offer hope for English educators navigating the tension between standardised accountability demands and meaningful learning. By reconnecting literature study to human understanding—by helping students recognise that the struggles, choices, and growth of literary characters illuminate their own lived experience and by teaching them to apply analytical practices to real-world phenomena—we transform literature from academic obligation into transformative learning that develops enduring intellectual capacities.

FLIP FRIDAY- STUDENT AS TEACHER: ENHANCING STUDENT LEARNING BEHAVIOUR IN EARLY YEARS

Ms. Jimlee Baruah & Ms. Manisha Singh

The Millennium School

Sample Size: 22

Introduction & Rationale

In the foundational years, classroom learning is typically teacherdirected, with children following instr uctions, listening passively, and participating only when prompted. While this structure ensures order, it often limits children's sense of agency.

During daily observations, we noticed:

- A group of children who hesitated to speak during circle time
- Learners who avoided participating in recaps
- Children who lacked initiative unless directly asked

This raised a critical question:

Would children become more confident, engaged, and responsible if given the teacher's role?

The idea of **Flip Friday – Student as Teacher** emerged from this curiosity. The intent was to explore whether shifting ownership of learning to students—even briefly—could influence:

- Confidence
- Communication
- Social behaviour
- Concept retention
- Peer interaction

This research seeks to understand how giving children structured opportunities to "teach" can strength en learning behaviour in the early years.

Intervention Strategy

We introduced Flip Friday – Student as Teacher, where children took on the role of the teacher every Friday.The goal was to build confidence, improve learning behaviour, and increase participation in L KG. We followed a weekly cycle using the **I Do – We Do – You Do** method for 4 weeks:

a. *Week Pattern*

- Monday – I Do:
  Teacher modelled the full Flip Friday routine.
  (Greeting → Revising → Asking questions → Activity → Reflection)
- Wednesday – We Do:
  Teacher and children practised the same routine together.
  Children tried small parts like greeting or asking one question.
- Friday – You Do:
  1–2 children became **Friday Leaders** and led a short recap session independently.

b. *Roles Given to Children*

- Greeting Leader
- Revision Leader
- Question Leader
- Activity Leader
- Reflection Leader

Children got different roles each week to ensure fairness and confidence building.

c. *Tools Used*

To make the process child-friendly and visual, we used:

- **Picture task cards** (Greet → Revise → Ask → Activity → Reflect)
- **Flashcards** (letters, numbers, pictures)
- **Prompt cards** ("Who knows?", "Tell me," "What comes next?")
- Smiley reflection cards
- Hopscotch numbers / quick activity cards
- **Hubs created for various activities** for children to rehearse during free play

d. *Duration*

- 4 weeks
- 3 sessions per week

Monday modelling

Wednesday practice

Friday student-led

Each session lasted **7–10 minutes**

3. Innovation & Adaptation (Integrated into Intervention)

To make Flip Friday suitable for early-years learners, we made important adaptations:

Picture-Based Routine

Instead of verbal instructions, children followed **visual routine cards**, helping all learners—including shy ones—understand the sequence easily.

Pair Leadership

In the first two weeks, leaders were paired to reduce anxiety and build confidence.

Fun Appreciation claps to motivate students

Short Scripts

Teacher created simple sentence starters like:

- "Today we will revise…"
- "Who wants to answer?"
- "Let's try together."

Children used these to feel confident.

Practice Corner

A small corner was created with:

- Flashcards
- A pretend teacher chair
- Children practised Flip Friday during free play—making learning natural and joyful.

Rotating Roles

Instead of giving one child the full routine, each week a new child took a different role.This ensured **e qual participation** and reduced performance pressure.

Short Combined Version

The intervention followed a simple weekly I Do - You Do -We Do cycle over four weeks.
On Mondays, the teacher modelled the Flip Friday routine; on Wednesdays, children practised with su pport; and on Fridays, selected Friday Leaders led the class independently. Tools such as picture task cards, flashcards, prompt cards, and appreciation claps helped make the process visual and child friendly. Adaptations included pair leadership, rotating roles, short scripts, and a practice corner to ma ke the strategy suitable for young learners and reduce anxiety. Each session lasted 7–10 minutes, three times a week, helping children gradually build confidence, leadership, and learning behaviour.

4. Observation & Evidence

a. *Noticing & Patterns (Short Version)*

- Increased Confidence
  Quiet children started volunteering as *Friday Leaders*.
  Evidence: Student quote — "Ma'am, can I teach today?"
- Better Concept Retention
  Students remembered letters, sounds, numbers, and story steps more accurately when they taught the class.
  Evidence: Leader sheet showing correct sequencing.

- Higher Engagement
  Students were more attentive during peer-teaching than teacher-led recaps.
  Evidence: Photos of children watching the leader and responding.
- Emerging Teacher-like Behaviour
  Children naturally used facilitation language:
  "Eyes on me," "Who wants to answer?", "Good job!"
- Positive Classroom Climate
  Reflection circles showed peer appreciation and encouragement.
  Evidence: Data tally of "appreciation comments" increasing weekly.

b. Surprises & Explicit Patterns

- Unexpected Collaboration: Children helped leaders prepare without being asked.
- Spatial Challenges: A few still struggled arranging materials (e.g., number cards, letter trays) during leadership time.

5. Reflection & Learnings

a. Insight on Student Learning

Students learned better when *they became the teachers*. Peer - led instruction improved their confidence, vocabulary, and recall. Leadership roles helped even shy children participate more meaningfully.

b. Insight on Teacher Practice

The teacher's shift from "explaining" to "facilitating" created more ownership among students. The I–We–You model proved effective in reducing teacher talk-time and increasing student agency.

c. Next Step for Improvement

We observed improved *visualisation and recall*, however some children still struggle with organising materials and explaining steps clearly. The next phase will include *structured visual supports* (picture cues, sequencing mats, anchor charts) to strengthen clarity and independence during peer-teaching.

The experience reinforced that leadership can and should be nurtured as early as pre-primary.

d. Future Plans

- Introduce a Friday Leader Kit
- Add simple **self-reflection slips** for student-teachers
- Ensure every learner gets equal opportunities
- Include video reflections for documentation

6. Relevance to Educators

This study shows that giving children small leadership roles and using the I–We–You pattern can make classrooms more active, positive, and student-driven. Any teacher—across grades—can try this approach without extra resources.

Two Simple Ways Educators Can Adapt This Strategy

- Start With Micro-Teaching Roles

Let 2–3 students become "Mini Teachers" every Friday to recap the week's learning. This works in any subject and builds confidence, speaking skills, and responsibility.

- Use a Weekly I–We–You Routine

Follow a simple pattern—**Monday: I Do**, **Wednesday: We Do**, **Friday: You Do**—
to slowly shift responsibility to students. This helps reduce reteaching and improves retention.

7. Reference Materials & Data Evidence

a. *Teacher's Observation Notes*

Anecdotal logs documenting changes in confidence, leadership language, and group behavior.

Anecdote 1: The "Teacher Voice" Moment

During Week 1 of Flip Friday, a child took the role of *Revision Leader*. At first, the child quietly held the flashcards, unsure of how to begin. The class became slightly noisy, sensing the hesitation.

Suddenly, the child tapped the card gently on the table and repeated a line the teacher often uses:

"Eyes on me."

To everyone's surprise, the class immediately settled. The child then lifted the picture card and confid ently said, "Today we will revise." The routine continued smoothly, with the child pausing after each flashcard so peers could respond.

By the end of the session, the child stood a little tallerclearly recognising the power of a teacher's pres ence. This moment showed how deeply children internalise facilitation language and how leadership r oles help them practise it naturally.

Anecdote 2: Peer Support in Action

While preparing for the Friday session, two children were sitting near the *Practice Corner*. One child had been selected as the *Activity Leader* but kept mixing up the sequence of the hopscotch number car ds. Without being asked, another child leaned over and said,

"First keep one… then two… I will help you."

Together, they arranged the cards, rehearsed the instructions, and even practised saying, "Let's try tog ether" By the time the session began, the Activity Leader executed the routine smoothly.

This unexpected collaboration showed that Flip Friday was not only building confidence but also nurt uring empathy, teamwork, and peer scaffolding behaviours that had not been explicitly taught but emerged naturally through shared responsibility.

Anecdote 3: Reflection Circle Breakthrough

During the Reflection Leader's turn, the teacher placed the smiley reflection cards on the mat. A child who rarely expresses emotions or gives feedback picked up the "happy" card and said,

"I liked how the leader asked questions slowly. I understood."

This was the first time the child had openly expressed a learning preference in the group. The class listened attentively. Another child responded, “Yes, slow was good.”
This simple moment demonstrated how Flip Friday created a safe space for children to voice opinions, appreciate each other, and reflect on learning—an essential skill in the early years.

b. *Weekly I–We–You Schedule Chart*

A simple visual showing: **Monday – I Do/Wednesday – We Do/ Friday- You do**

Day	**Routine Step**	**Description**
Monday	I Do	Teacher models the full Flip Friday routine (Greeting → Revision → Questions → Activity → Reflection).
Wednesday	We Do	Teacher and students practise the routine together. Children take small parts like greeting or asking one question.
Friday	You Do	Student Friday Leaders conduct the recap session independently using picture cards, prompts, and role badges.

BRIDGING LEARNING GAPS OF STRUGGLING LEARNERS IN PRIMARY LEVEL THROUGH SPIRAL CURRICULUM.

Ms. Jayalakshmi J & Ms. Shanmuga Priya R

Lakshmi Matriculation Higher Secondary School

Sample Size: 79

1. Introduction & Rationale

In our school, we noticed that there's a specific number of students, who need special attention and care especially after pandemic period. Our population doesn't get parental support in learning as it's more of first-generation learners.

We found that the students are quite normal ones from kindergarten but the learning gaps were noticed year-on-year. If we address them during this primary level, the learning process would be much easier for the students, when they move to middle level.

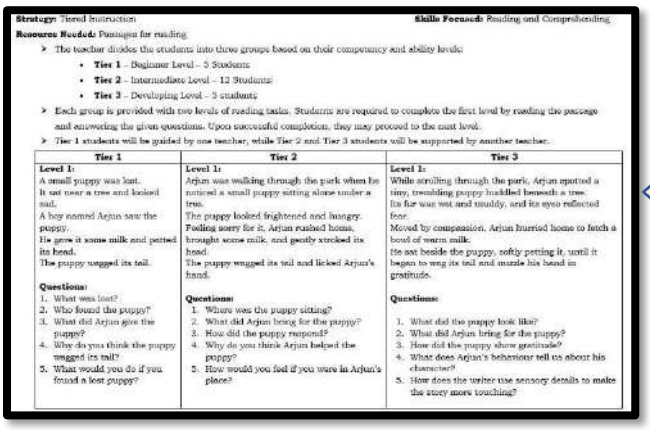
This study has explored whether there are ways to address the learning gaps of struggling learners at Primary level as we identify at initial stage itself.

2. Intervention Strategy

- Conducted a **Pre-Assessment** to know the level of students. The tools were prepared on Languages (both Tamil & English) and Math. We analysed the data.
- **Spiral curriculum** refers to a curriculum design in which key concepts are presented repeatedly throughout the curriculum, but with deepening layers of complexity, or in different applications. **The principle of Spiral Curriculum was applied in a different context that is for Struggling Learners is our Innovation in Education.**

- The **Spiral Curriculum** was developed by the Teacher-Mentors under the guidance of Senior Researcher (Principal) for 3 subjects in Languages & Math and exclusively for classes 2 to 5 for the identified key skills / concepts with a graded syllabus for every class.

- Through **Differentiated Instruction (DI) Approach**, we planned to make a shift from one level to the next level in their competency level. This was done with exclusive **Lesson plans** using some DI strategies such as **Tiered Instructions / Four way worksheet / Graffitti wall / Math Centered Strategy / Honey Comb / Gallery Walk / Catch the Bus / Round Robin / Exit Card**.
- **Sample** Differentiated Instruction **Strategies Used** in the **Lesson Plans** are given below for **Languages**.



Strategy:

Tiered Instruction

[Std – 5]

Strategy: Tiered Instruction **Skills Focused:** Reading and Comprehending

Resources Needed: Passages for reading

- The teacher divides the students into three groups based on their competency and ability levels:
  - **Tier 1** – Beginner Level – 5 Students
  - **Tier 2** – Intermediate Level – 12 Students
  - **Tier 3** – Developing Level – 5 students
- Each group is provided with two levels of reading tasks. Students are required to complete the first level by reading the passage and answering the given questions. Upon successful completion, they may proceed to the next level.
- Tier 1 students will be guided by one teacher, while Tier 2 and Tier 3 students will be supported by another teacher.

Tier 1	Tier 2	Tier 3
Level 1: A small puppy was lost. It sat near a tree and looked sad. A boy named Arjun saw the puppy. He gave it some milk and patted its head. The puppy wagged its tail. **Questions:** 1. What was lost? 2. Who found the puppy? 3. What did Arjun give the puppy? 4. Why do you think the puppy wagged its tail? 5. What would you do if you found a lost puppy?	**Level 1:** Arjun was walking through the park when he noticed a small puppy sitting alone under a tree. The puppy looked frightened and hungry. Feeling sorry for it, Arjun rushed home, brought some milk, and gently stroked its head. The puppy wagged its tail and licked Arjun's hand. **Questions:** 1. Where was the puppy sitting? 2. What did Arjun bring for the puppy? 3. How did the puppy respond? 4. Why do you think Arjun helped the puppy? 5. How would you feel if you were in Arjun's place?	**Level 1:** While strolling through the park, Arjun spotted a tiny, trembling puppy huddled beneath a tree. Its fur was wet and muddy, and its eyes reflected fear. Moved by compassion, Arjun hurried home to fetch a bowl of warm milk. He sat beside the puppy, softly petting it, until it began to wag its tail and nuzzle his hand in gratitude. **Questions:** 1. What did the puppy look like? 2. What did Arjun bring for the puppy? 3. How did the puppy show gratitude? 4. What does Arjun's behaviour tell us about his character? 5. How does the writer use sensory details to make the story more touching?

Strategy:

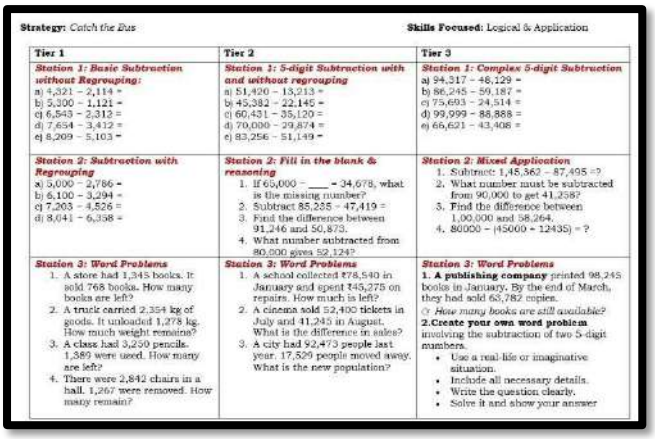
Graphic Organizer

[Std – 2]

செயல்பாடுகள்: **Graphic Organizer** மேம்பட்ட திறன்கள்: வாசித்தல், எழுதுதல்

மொட்டு	முகை	மலர்
தொடக்க நிலை மாணவர்கள் ஆசிரியரின் உதவியும் வழிகாட்டுதலும் எழுத்துகளை கண்டறியக்கூடிய மாணவர்கள் கலந்து கொடுக்கப்பட்ட "ஐ" வரிசை எழுத்துகளைக் கொண்ட வண்ண அட்டைகளை வரிசைப்படி சீரமைத்து அதனைக் கூறச்செய்தல்.	இடைப்பட்ட நிலை மாணவர்கள் ஆசிரியரின் உதவியின்றி எழுத்துகளை அடையாளம் காணக்கூடிய மாணவர்கள் வண்ண அட்டைகளில் இடம் பெற்றுள்ள சொற்றொடர்களில் "ஐ" வரிசைச் சொற்களை வட்டமிட்டு கூறச்செய்தல்.	மேம்பட்ட நிலை மாணவர்கள் எழுத்துகள் அடங்கிய சொற்களைக் கூறும் திறன் பெற்றவர்கள் கலந்து கொடுக்கப்பட்ட எழுத்துகளைக் கொண்ட வண்ண அட்டைகளை சீரமைத்து "ஐ" வரிசைச் சொற்களைக் கண்டறிந்து அதனைக் கூறச்செய்தல்.

- **Sample** Differentiated Instruction **Strategy Used** in the **Lesson Plan** is given below for **Mathematics**.



Strategy: *Catch the Bus* **Skills Focused:** Logical & Application

Tier 1	Tier 2	Tier 3
Station 1: Basic Subtraction without Regrouping: a) 4,321 – 2,114 = b) 5,300 – 1,121 = c) 6,543 – 2,312 = d) 7,654 – 3,412 = e) 8,209 – 5,103 =	***Station 1: 5-digit Subtraction with and without regrouping*** a) 51,420 – 13,213 = b) 45,382 – 22,145 = c) 60,431 – 35,120 = d) 70,000 – 29,874 = e) 83,256 – 51,149 =	***Station 1: Complex 5-digit Subtraction*** a) 94,317 – 48,129 = b) 86,245 – 59,187 = c) 75,693 – 24,514 = d) 99,999 – 88,888 = e) 66,621 – 43,408 =
Station 2: Subtraction with Regrouping a) 5,000 – 2,786 = b) 6,100 – 3,294 = c) 7,203 – 4,526 = d) 8,041 – 6,358 =	***Station 2: Fill in the blank & reasoning*** 1. If 60,000 – ___ = 34,678, what is the missing number? 2. Subtract 85,235 – 47,419 = 3. Find the difference between 91,246 and 50,873. 4. What number subtracted from 80,000 gives 52,124?	***Station 2: Mixed Application*** 1. Subtract: 1,45,362 – 87,495 =? 2. What number must be subtracted from 90,000 to get 41,258? 3. Find the difference between 1,00,000 and 58,264. 4. 80000 – (45000 + 12435) = ?
Station 3: Word Problems 1. A store had 1,345 books. It sold 768 books. How many books are left? 2. A truck carried 2,354 kg of goods. It unloaded 1,278 kg. How much weight remains? 3. A class had 3,250 pencils. 1,389 were used. How many are left? 4. There were 2,842 chairs in a hall. 1,267 were removed. How many remain?	***Station 3: Word Problems*** 1. A school collected ₹78,540 in January and spent ₹45,275 on repairs. How much is left? 2. A cinema sold 52,400 tickets in July and 41,245 in August. What is the difference in sales? 3. A city had 92,473 people last year. 17,526 people moved away. What is the new population?	***Station 3: Word Problems*** **1. A publishing company** printed 98,245 books in January. By the end of March, they had sold 63,782 copies. *How many books are still available?* **2.Create your own word problem** involving the subtraction of two 5-digit numbers. • Use a real-life or imaginative situation. • Include all necessary details. • Write the question clearly. • Solve it and show your answer

Strategy:

Catch the Bus

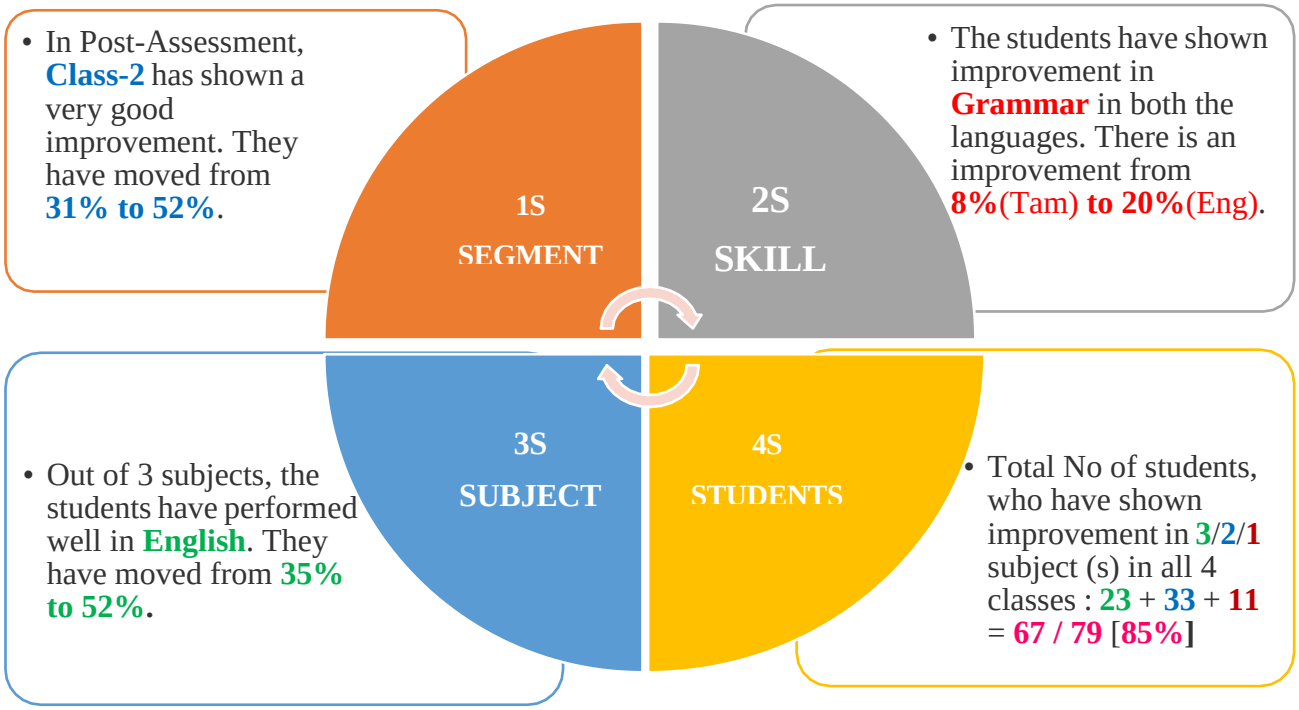
[Std – 5]

- Provided a minimum of **8 periods [2+2+4] per week** for 3 subjects for enhancing the basic skills among the struggling learners. For every class/subject, the **class ratio was 2:20** to provide individual care and attention.
- Conducted a **Post Assessment** (Impact) to see improvements in them at basic level, which would help us standardize the process.
- The Timeframe for this Research is as follows:

Pre-Assessment	2nd week of April '25
Create Spiral Curriculum & Lesson Plans	April – June '25
Equip the Team for Quality of Delivery	Last week of May '25
Schedule & Classes began	2nd week of June '25
Span of Research	6 - 8 Months
Post-Assessment (Impact Study)	Last week of October '25
Reflections based on Impact Study	November '25
Modifications Required / Standardize the Process	November '25

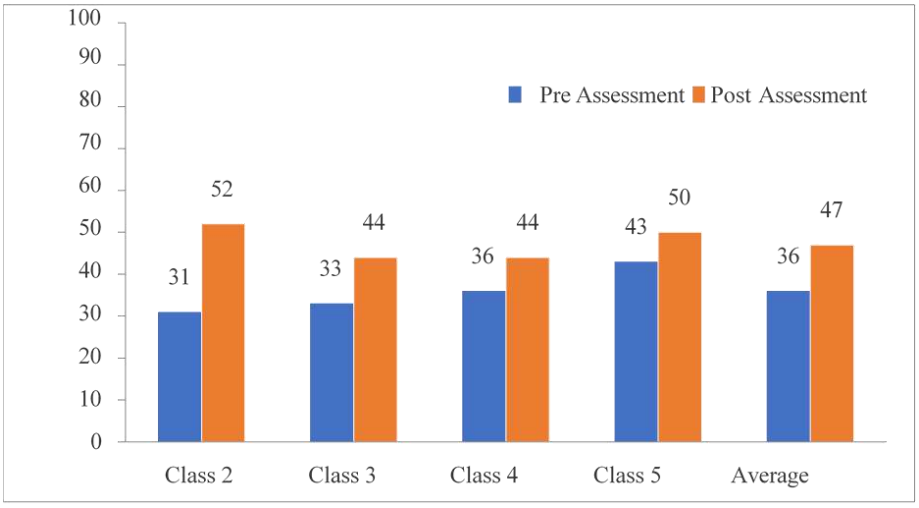
3. Observation and Evidence

- It is evident that there is a significant improvement by 11% altogether @ Primary Level in this Spiral Curriculum for Struggling Learners through our Pre and Post assessments.
- We noticed improvements in the following 4 key aspects **[4S]** in this Study.

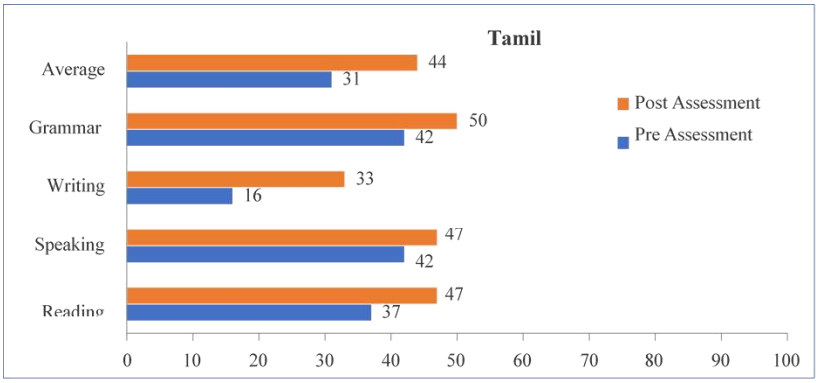


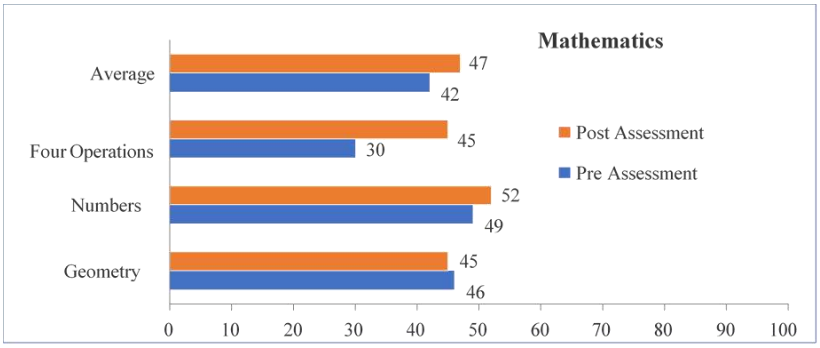
Detailed Analysis done is given below**:**

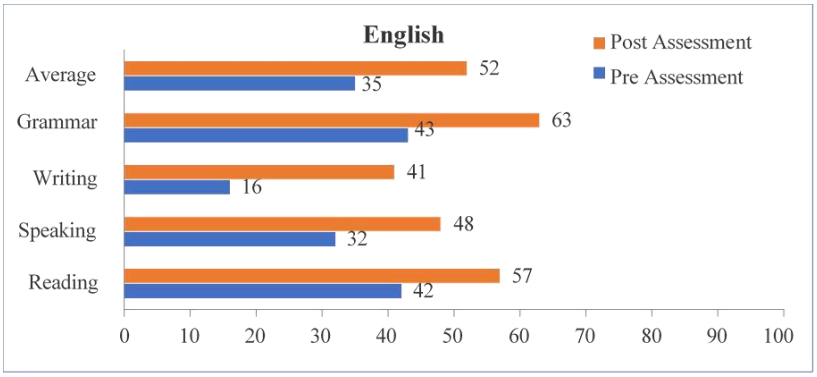
a. *SEGMENT - Effectiveness of Spiral Curriculum*



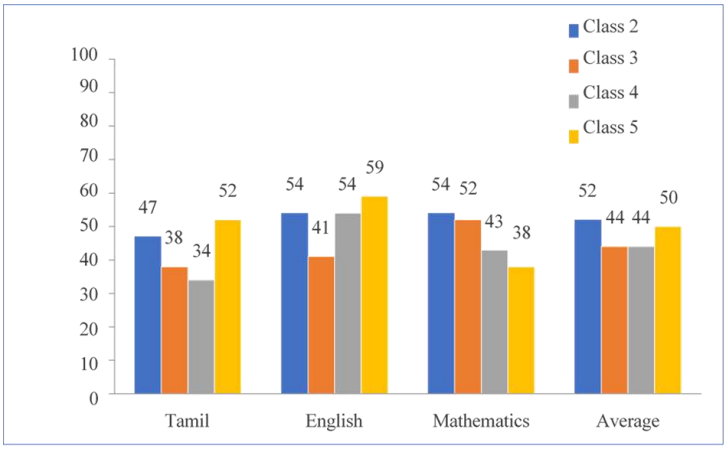
b. *Comparative Skill-Wise / Concept Performance @ Primary Level*







c. *Subject-wise Performance in Spiral Curriculum:*



d. Challenges we faced during the study:

As our school functions on a general shift timings and situated in the outskirts of the city, we need to manage the school programs within the school hours. Hence the Spiral Program Schedule had been taking place during the ancillary subjects like Computer, Hindi and some activity periods, which can be supplemented at a later period also. The students were not quite happy initially to miss these ancillary periods along with their friends and undergoing the special program exclusively for them.

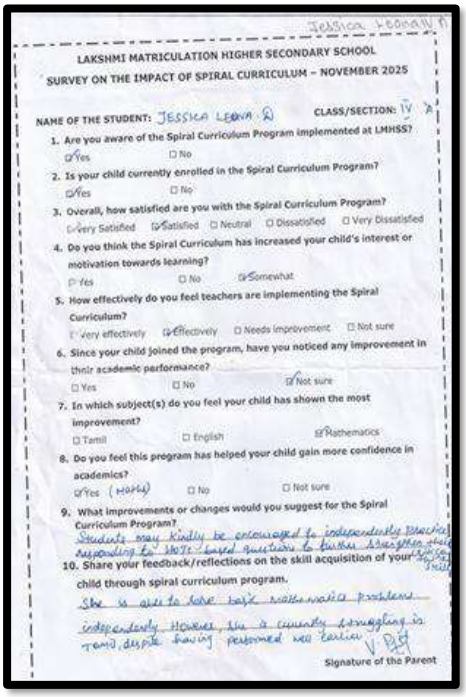
To make the students feel comfortable, we used DI strategies along with grouping system (individual / pair / trio) in the classroom activities. Then they started enjoying to be a part of the sessions happily.

Convincing the parents for this special program was another big challenge but later they realized the importance and improvement of their own child. We conveyed that we are not branding any student(s) through this program rather helping the student bridge the learning gap.

During our Parenting Sessions, this initiative was addressed as a highlight of the school with its objectives and after that few parents volunteered themselves to include their children in this Program even though the performance of their wards was quite satisfactory. It showed their understanding and success of the program as well.

4. Reflection & Learnings

- We found that Differentiated Instruction approach is quite suitable to address the struggling learners in the classroom through effective strategies. Hence we recommend the same to the teachers.
- Having an exclusive **Spiral Curriculum helps the students track their own growth in skill acquisition / concept clarity** and they can address the gaps by taking more practice sheets by themselves especially with upper primary level. This gives them confidence to move ahead.
- We administered a random **Quick Survey among Parents of this group [25%]** to know the pulse of the stakeholders and their satisfaction / opinions regarding the impact of the Program and enclosed the sample perceptions of the parents. It gives an immense satisfaction to our work.



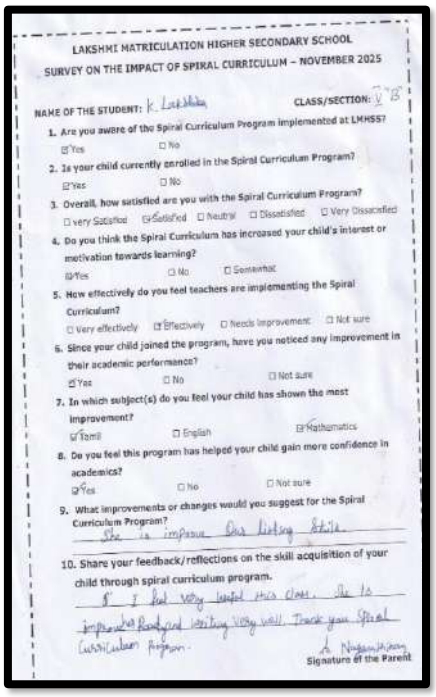
LAKSHMI MATRICULATION HIGHER SECONDARY SCHOOL

SURVEY ON THE IMPACT OF SPIRAL CURRICULUM – NOVEMBER 2025

NAME OF THE STUDENT: JESSICA LEONA A CLASS/SECTION: IV A

1. Are you aware of the Spiral Curriculum Program implemented at LMHSS?
   ☑ Yes ☐ No
2. Is your child currently enrolled in the Spiral Curriculum Program?
   ☑ Yes ☐ No
3. Overall, how satisfied are you with the Spiral Curriculum Program?
   ☐ Very Satisfied ☑ Satisfied ☐ Neutral ☐ Dissatisfied ☐ Very Dissatisfied
4. Do you think the Spiral Curriculum has increased your child's interest or motivation towards learning?
   ☐ Yes ☐ No ☑ Somewhat
5. How effectively do you feel teachers are implementing the Spiral Curriculum?
   ☐ Very effectively ☑ Effectively ☐ Needs improvement ☐ Not sure
6. Since your child joined the program, have you noticed any improvement in their academic performance?
   ☐ Yes ☐ No ☑ Not sure
7. In which subject(s) do you feel your child has shown the most improvement?
   ☐ Tamil ☐ English ☑ Mathematics
8. Do you feel this program has helped your child gain more confidence in academics?
   ☑ Yes (Maths) ☐ No ☐ Not sure
9. What improvements or changes would you suggest for the Spiral Curriculum Program?
   Students may kindly be encouraged to independently practice responding to WOTs / keyed questions to further strengthen their
10. Share your feedback/reflections on the skill acquisition of your child through spiral curriculum program.
    She is able to solve basic mathematical problems independently. However, she is currently struggling in Tamil, despite having performed well earlier.

Signature of the Parent



LAKSHMI MATRICULATION HIGHER SECONDARY SCHOOL

SURVEY ON THE IMPACT OF SPIRAL CURRICULUM – NOVEMBER 2025

NAME OF THE STUDENT: K. [illegible] CLASS/SECTION: V B

1. Are you aware of the Spiral Curriculum Program implemented at LMHSS?
   ☑ Yes ☐ No
2. Is your child currently enrolled in the Spiral Curriculum Program?
   ☑ Yes ☐ No
3. Overall, how satisfied are you with the Spiral Curriculum Program?
   ☐ Very Satisfied ☑ Satisfied ☐ Neutral ☐ Dissatisfied ☐ Very Dissatisfied
4. Do you think the Spiral Curriculum has increased your child's interest or motivation towards learning?
   ☑ Yes ☐ No ☐ Somewhat
5. How effectively do you feel teachers are implementing the Spiral Curriculum?
   ☐ Very effectively ☑ Effectively ☐ Needs improvement ☐ Not sure
6. Since your child joined the program, have you noticed any improvement in their academic performance?
   ☑ Yes ☐ No ☐ Not sure
7. In which subject(s) do you feel your child has shown the most improvement?
   ☑ Tamil ☐ English ☑ Mathematics
8. Do you feel this program has helped your child gain more confidence in academics?
   ☑ Yes ☐ No ☐ Not sure
9. What improvements or changes would you suggest for the Spiral Curriculum Program?
   She is improving. Pls listing skills.
10. Share your feedback/reflections on the skill acquisition of your child through spiral curriculum program.
    I feel very helpful this class. She is improved. Reading writing very well. Thank you Spiral Curriculum Program.

Signature of the Parent

- We made an attempt of finding the **Average Vs Range of the subject / class** and the table is given below. Our interpretations are given herewith.

Class	Subject	Type of Assessment	Average	Highest Score	Lowest Score	Range	Type (Average Vs Range)	Type (in words)	Remarks
Class 2	English	Pre Assessment	28	58	4	54	28-58	Low - High	A) **Low-Low: Weak but consistent** : Most students were performing poorly at a similar level. It required overall teaching intervention and they had moved to the next level. B) **Low-High: Problematic:** Performance varies widely with many struggling. Attention needed for weaker students while keeping support for some enhanced good performers as well from this Program. C) **High-Low: Ideal:** Some students have started performing well. D) **High-High: Mixed:** Many students started doing well, but a few low performers are pulling the range up. Need to support outliers.
		Post Assessment	54	72	16	56	54-56	High – High	
	Tamil	Pre Assessment	25	58	8	50	25-50	Low - High	
		Post Assessment	47	76	16	60	47-60	Low - High	
	Mathematics	Pre Assessment	40	60	16	44	40-44	Low – Low	
		Post Assessment	54	82	34	48	54-48	High – Low	
Class 3	English	Pre Assessment	30	58	12	46	30-46	Low – Low	
		Post Assessment	41	70	10	60	41-60	Low - High	
	Tamil	Pre Assessment	33	52	10	42	33-42	Low - High	
		Post Assessment	38	64	12	52	38-52	Low - High	
	Mathematics	Pre Assessment	37	56	16	40	37-40	Low – Low	
		Post Assessment	52	80	16	64	52-64	Low - High	
Class 4	English	Pre Assessment	41	70	4	66	41-66	Low - High	
		Post Assessment	54	84	18	66	54-66	Low - High	
	Tamil	Pre Assessment	27	58	6	52	27-52	Low - High	
		Post Assessment	34	66	4	62	34-62	Low - High	
	Mathematics	Pre Assessment	41	74	16	58	41-58	Low - High	
		Post Assessment	43	70	4	66	43-66	Low - High	
Class 5	English	Pre Assessment	40	62	8	54	40-54	Low - High	
		Post Assessment	59	78	20	58	59-58	High – High	
	Tamil	Pre Assessment	40	82	16	66	40-66	Low - High	
		Post Assessment	52	90	12	78	52-78	Low - High	
	Mathematics	Pre Assessment	48	64	20	44	48-44	Low – Low	
		Post Assessment	38	62	14	48	38-48	Low - High	

5. Relevance

- This **Spiral Curriculum** works out well for Struggling Learners, it could be of immense help to primary teachers for **addressing their needy students** in the classrooms.
- It can be considered as a proven research and **can be customized to their population based on the learning gaps identified** and make wonders in the life of young struggling learners. It

doesn't require much resources, low-cost but having personal satisfaction for the teacher.

- This new experiment would **help the teachers of both primary and middle level** to customize their teaching-learning process before they step into middle level and have a **happy learning environment for students**.
- We suggest this Spiral Curriculum with Differentiated Instruction Approach can be suitable to **Special Educators**, who handle special students.

6. Reference Materials & Data Evidence

Reference Materials / Documentation:

a. *Spiral Syllabus for all 3 subjects*

English

SKILL	CLASS 2	CLASS 3	CLASS 4	CLASS 5
LISTENING	Listening skills will be focused in learning process			
READING	❑ Starting from 2 letter words to 5 letter words ❑ Short paragraph minimum of 5 sentences	❑ Starting from 2 letter words to 5 letter words ❑ Short paragraph minimum of 8 sentences	❑ Starting from 2 letter words to 6 letter words ❑ Paragraph minimum of 10 sentences	❑ Starting from 2 letter words to 8 letter words ❑ Paragraph minimum of 12 sentences
WRITING	❑ Worksheet related to Vocabulary enhancement. ❑ Worksheet on reading comprehension with simple 'wh' questions (Level of difficulty will depend on the content presented for reading and will vary according to the classes)			
SPEAKING	❑ Minimum of 3 sentences on a given topic	❑ Minimum of 5 sentences on a given topic	❑ Minimum of 7 sentences on a given topic	❑ Minimum of 9 sentences on a given topic
GRAMMAR	❑ Noun ❑ Verb ❑ Singular/Plural ❑ Antonyms/ Synonyms	❑ Noun - Common & Proper ❑ Verb ❑ Singular/Plural ❑ Antonyms/ Synonyms	❑ Noun - Common & Proper ❑ Verb ❑ Adjective ❑ Singular/Plural ❑ Antonyms/ Synonyms	❑ Noun - Common & Proper, Collective ❑ Verb ❑ Adjective ❑ Singular/Plural ❑ Antonyms/ Synonyms

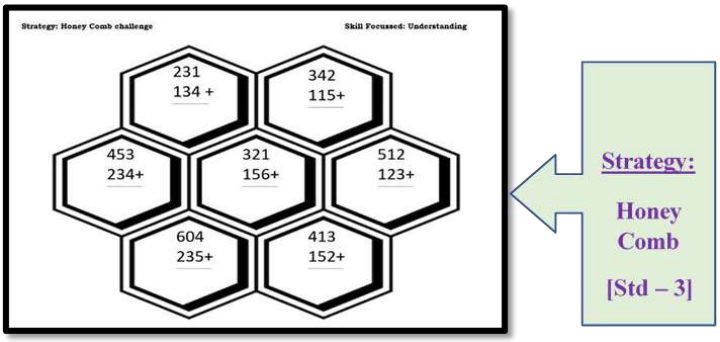
Tamil

திறன்கள்	வகுப்பு - 2	வகுப்பு - 3	வகுப்பு - 4	வகுப்பு - 5
கேட்டல்	கற்றல் செயல்பாட்டில் கேட்டல் திறன் வலியுறுத்தப்படும்.			
வாசித்தல்	உயிரெழுத்துகள், மெய்யெழுத்துகள், உயிர்மெய்யெழுத்துகள், ஈரெழுத்துச் சொற்கள் மற்றும் மூவெழுத்து சொற்கள்	உயிரெழுத்துகள், மெய்யெழுத்துகள், உயிர்மெய்யெழுத்துகள் மற்றும் ஈரெழுத்துச் சொற்கள் முதல் நான்கெழுத்துச் சொற்கள் வரை. குறில் நெடில் கொண்ட சிறு வாக்கியங்கள்.	உயிரெழுத்துகள், மெய்யெழுத்துகள், உயிர்மெய்யெழுத்துகள் மற்றும் ஈரெழுத்துச் சொற்கள் முதல் 5 எழுத்து சொற்கள் வரை. குறில் நெடில் வாக்கியங்கள்.	உயிரெழுத்துகள், மெய்யெழுத்துகள், உயிர்மெய்யெழுத்துகள் மற்றும் ஈரெழுத்துச் சொற்கள் முதல் 5 எழுத்து சொற்கள் வரை. ஐந்து வாக்கியங்கள் முதல் சிறு சிறு பத்திகள்.
எழுதுதல்	• சொற்களுக்கிடையே இடைவெளி விட்டு எழுதுதல் • எளிய பத்திகள் கொடுத்து வினாக்களுக்கு விடையளித்தல் மூலம் எழுதும் திறன் மேம்படுத்தப்படும்.			
பேசுதல்	குறிப்பிட்ட தலைப்புகளில் குறைந்தபட்சம் 3 வாக்கியங்களில் பேசுதல்.	குறிப்பிட்ட தலைப்புகளில் குறைந்தபட்சம் 3 முதல் 5 வாக்கியங்களில் பேசுதல்.	குறிப்பிட்ட தலைப்புகளில் குறைந்தபட்சம் 5 வாக்கியங்களில் பேசுதல்.	குறிப்பிட்ட தலைப்புகளில் குறைந்தபட்சம் 5 முதல் 7 வாக்கியங்களில் பேசுதல்.
இலக்கணம்	முதல் பன்மை, பொருள் தருக, எதிர்சொல், பெயர்சொல், வினைச்சொல்.	முதல் பன்மை, பொருள் தருக, எதிர்சொல், பெயர்சொல், வினைச்சொல்	முதல் பன்மை, பொருள் தருக, எதிர்சொல், பெயர்சொல், வினைச்சொல், தினை	முதல் பன்மை, பொருள் தருக, எதிர்சொல், பெயர்சொல், வினைச்சொல், தினை, பால், வசன

Mathematics

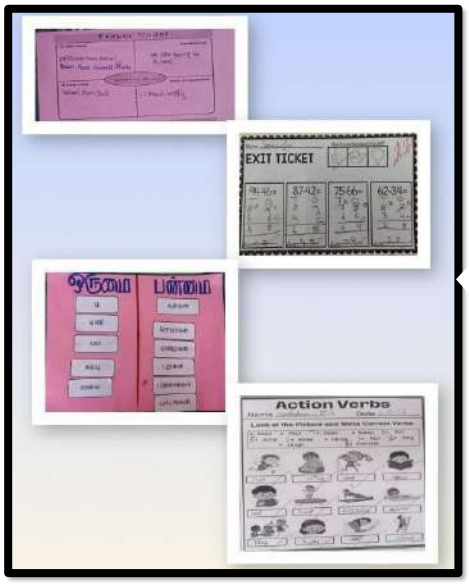
TOPIC	CLASS 2	CLASS 3	CLASS 4	CLASS 5
GEOMETRY	• 2D Shapes • Differentiating 2D & 3D	• 2D & 3D Shapes • Lines & types of lines	• Properties of 2D & 3D shapes • Area • Perimeter	• Perimeter & Area • Area of 2D shapes • Angles
NUMBERS	• Numerical exercises (Numbers from 1-100)	• Numerical exercises (Numbers from 101-10,000)	• Numerical exercises (Numbers from 10,001-1,00,000)	• Numerical exercises (Numbers from 1,00,001-10,00,000)
ADDITION	• Addition – 2 digit with and without regrouping	• Addition – 3 digit with and without regrouping • Adding the numbers by writing them vertically • Situational Problems	• Addition – 4 digit with and without regrouping • Adding the numbers by writing them vertically • Situational Problems	• Addition – 5 digit with and without regrouping • Adding the numbers by writing them vertically • Situational Problems
SUBTRACTION	• Subtraction – 2 digit with and without regrouping	• Subtraction – 3 digit with and without regrouping • Subtracting the numbers by writing them vertically • Situational Problems	• Subtraction – 4 digit with and without regrouping • Subtracting the numbers by writing them vertically • Situational Problems	• Subtraction – 5 digit with and without regrouping • Subtracting the numbers by writing them vertically • Situational Problems
MULTIPLICATION	• Recite tables (1-10)	• Recite tables (1-10) • Repeated addition • Situations involving repeated addition • Recite tables (1,2,5,10)	• Recite tables (1-20) • Lattice multiplication (2x1 and 3x1 • Multiplication facts (1-10 tables)	• Lattice multiplication (2x1, 3x1 & 3x2) • Standard algorithm (2x1,3x1 & 2x2)
DIVISION		• Situations involving equal sharing • Dividing by grouping method	• Division using number bonds • Division using repeated subtraction • Division – Standard algorithm (2 digit by single digit)	• Division – Standard algorithm (2 digit by single digit) • Division – Standard algorithm (3 digit by 2 digit)
PATTERNS	• Shape patterns • Number patterns	• Shape patterns • Number patterns	• Number patterns • Patterns in multiplication and dividing by 10	• Number patterns • Patterns in multiplication and dividing by 10
MEASUREMENTS	• Comparing height/ weight	• Comparing length/weight/ capacity	• Convert smaller unit to larger unit • Addition & subtraction in measurements	• Convert smaller unit to larger unit & vice versa • Addition & subtraction in measurements

b. *Sample of an activity sheet for reference.*



c. *Data*

*Evidence on **Students' work** based on the classroom transaction (sample ones) in the form of a collage is given here.*

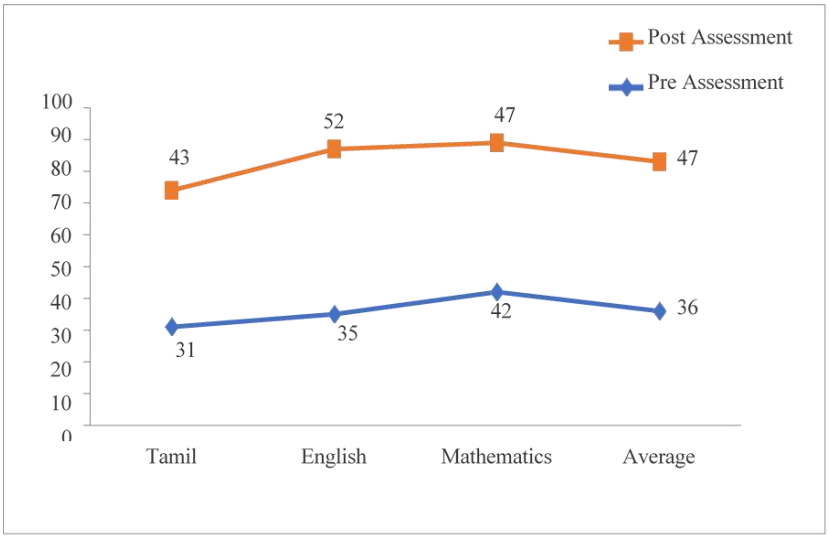


Attached the sample classroom environment of Spiral Curriculum when the students got engaged in the collaborative activity or discussions.

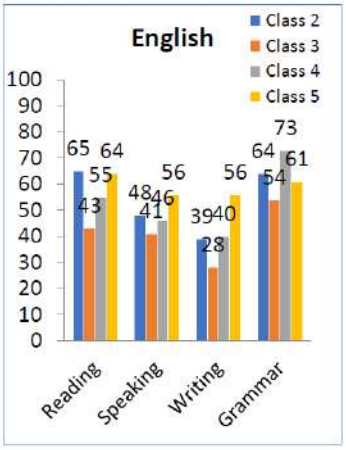
d. *Key Findings of this Research:*

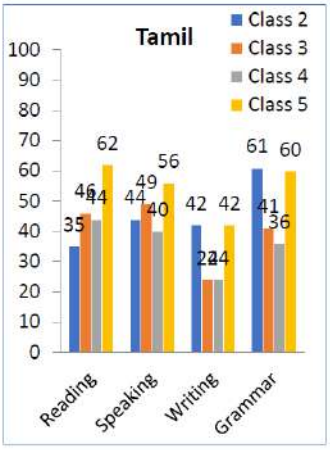
- The school's overall average has improved significantly from 36% to 47%, reflecting the effectiveness of the spiral curriculum.
- Classes 2 to 5 have shown steady progress from pre-assessment to post-assessment, with improvements ranging from 7% to 21%.
- Tamil and English averages have each increased by more than 10%, while Mathematics has shown a modest improvement of 5%.
- English grammar has shown excellent growth, as only a few key concepts were assessed.
- In Tamil, students demonstrated notable progress in writing skills.
- In Mathematics, there was a slight decline in Geometry (from 46% to 45%), but a marked improvement in Four Operations (from 30% to 45%).
- Overall, while the improvement is not uniform across all subjects and skills in Classes 2 to 5, there is clear and measurable progress in the key areas that were emphasized.

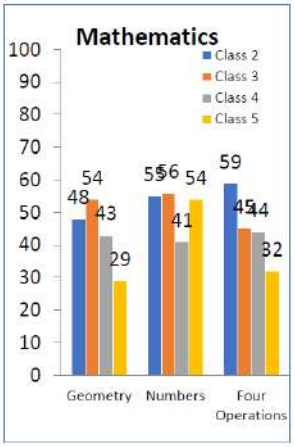
e. Overall Subject-wise Performance of Classes 2 to 5 together



f. Class-wise Skill / Concept Performance in Post-Assessment [Classes 2 TO 5]







TURNING ASSESSMENTS INTO ADVENTURE: USING INTERACTIVE HUBS TO REDUCE STRESS AND IMPROVE READING EVALUATION IN EARLY YEARS

Ms. Saher Alam & Ms. Shivani Gautam

The Millennium School

Sample Size: 22

1. Introduction & Rationale

In traditional reading assessments, many LKG children looked nervous, avoided eye contact, or rushed through reading. This made it hard for teachers to understand their true skills.
I felt the need to create a safe, joyful space where children could show their reading abilities naturally. Turning assessments into fun "learning hubs" helped reduce pressure and increased authentic learning moments.

Research Question

Can interactive activity hubs reduce stress and improve observation during kindergarten reading assessments?

Why This Topic Matters : Young learners need comfort and joy to perform well. When assessments feel like tests, children freeze. But when they feel like games, children willingly show what they know.
A playful environment allows teachers to collect clear, honest data without fear blocking children's performance.

Who This Study Is About : This study involved **Lower Kindergarten (LKG)** learners.

2. Intervention Strategy

a. Strategies Applied

- **Multi-sensory learning strategy** using visual cues, storytelling, drawing, and hands-on games.
- **Peer-assisted learning** during Buddy Time, promoting collaborative reading.
- **Play-based assessment strategy** instead of traditional questioning in Teacher Time Hub.
- **Rotation-based learning model** to provide exposure to multiple activities within short cycles.
- **Autonomy-building strategy** through independent movement, Reader Badges, and Assessment Passports.
- **Behavioural reinforcement strategy** using sticker-based motivation.

b. Planning and Implementation

- **Week-wise structured plan** created for 4 weeks with fixed hub days (Mon–Wed–Fri).
- **Week 1:** Introduced all hubs slowly using picture cues; teacher modelled each activity.
- **Week 2:** Children practised independent use of Reader Badges and simple texts.
- **Week 3:** Added more choice options (drawing/sequencing/colouring) to increase engagement.
- **Week 4:** Students operated hubs with minimal reminders, showing independence.
- **Pairing and grouping** planned weekly based on comfort and skill level.
- **Scaffolds and adaptations** (visual prompts, cue cards) were planned in advance for learners needing support.
- **Rotation timing** pre-decided to maintain a predictable routine for all children.

c. Tools / Activities Used

Creative Hub

- Picture sequencing cards
- Story prompts
- Drawing sheets, crayons
- Visual cue cards

Buddy Time Hub

- Mini storybooks
- Reader Badges
- Soft timer
- Partner reading routines

Teacher Time Hub

- I Spy vocabulary game
- Guess the Word (actions)

3. Observation & Evidence (What Did You Notice?)

a. Student Work Samples

- Drawings from the **Creative Hub** showed clearer story elements—children added emotions, details, and correct sequencing after Week 2.
- Buddy Reading sheets showed that **14 out of 22 children** started pointing to words independently while reading.

b. What We Noticed (Patterns)

- **Reduced Stress, Higher Excitement**

  Children approached hubs like games, not tests. Most children waited eagerly for their turn, showing **lower fear and higher motivation**.

- **Better Reading Behaviors**

  More children used **finger-pointing**, expressive reading, and complete sentences during Buddy Time. Vocabulary recall improved as children interacted with I SPY GAME repeatedly.

- **Peer Collaboration (Surprise Noticing)**

  A surprising pattern:
  Children collaborated more than expected.
  Many helped their buddy pronounce words, reminded them to collect badges, or supported them during reflection.
  This was not planned but became a positive outcome.

c. Areas Still Developing

A few children still struggled with:

- **Spatial terms** (placing stickers in the correct section of the passport)
- **Sequencing** images without teacher prompts.

This helped teachers plan next steps.

d. Link to Learning Outcomes

The hub structure helped children demonstrate:

- **Comprehension** through drawings and sequencing
- **Fluency** through buddy reading
- **Vocabulary recall** through word games
- **Self-assessment** through the smiley reflection chart

These outcomes were clearer and more authentic than traditional one-to-one testing.

5. Reflection & Learnings

The hub-based assessment showed that when reading evaluation feels like **play**, children demonstrate their real skills with confidence. A key insight about **student learning** was that children learned and performed better when they had **choice and movement**. Their drawings, buddy-reading behaviours, and vocabulary games revealed deeper comprehension and fluency than traditional assessment setups. Even quieter learners participated more because the hubs reduced fear and gave them freedom to express themselves naturally.

A second insight came from the **teaching practice** perspective: shifting assessment from one-to-one testing to interactive hubs allowed teachers to observe multiple children at once and capture rich, authentic evidence without pressure. It also highlighted the importance of preparing materials in advance and offering consistent prompting cues across hubs.

Next Step for Improvement:
The next phase is to add **simple rubrics for each hub** (e.g., expression, sequencing, decoding) and include short **student self-reflection slips** to build metacognition. This will help make the assessment system even more structured while keeping it joyful and stress-free.

6. Relevance to Educators

This study shows that assessments in early years can be turned into **playful learning experiences** without losing depth or accuracy. When children move through hubs, use choice boards, and engage with creative tools, they reveal their true understanding more confidently than in traditional testing setups.

For other educators, this model is easy to adapt with simple classroom materials.
Two practical ways teachers can implement it:

- **Start Small with Two Hubs**

Teachers can begin with just **Creative Hub + Teacher Time** during their regular reading period. Even a 20-minute rotation with simple tools like picture cards, sight-word games can make assessments joyful and less stressful.

- **Use Passports or Stickers to Build Excitement**

Introducing a **Reading Passport** or sticker chart can immediately shift children's mindset from "I am being tested" to "I am completing an adventure." This works across subjects—math, EVS, phonics—and helps keep learners motivated.

By adopting even one or two elements—choice, movement, creativity, or badges—educators can transform their assessment environment into a space where children feel confident, curious, and eager to show what they know.

DECLINING READING HABITS AND MAKING READING FUN AGAIN

Ms. Ridhima Sibal Dhingra

Bluebells School International

Sample Size: 35

1. Introduction & Rationale

Children didn't want to pick up a book by themselves. Reading increasingly is becoming part of a task list, rather than reading for fun and developing an innate sense of lifelong learning. With innumerable benefits, as proven through various scientific research papers, it was becoming imperative to have children adopt reading as a habit with intrinsic motivation rather than extrinsic push and assessments.

2. Intervention Strategy

To address the declining intrinsic motivation for reading, a multi-layered intervention was designed, combining assessment, environment redesign, structured choice, creative response tasks, and ongoing tracking.

A survey was conducted to find out about the reading habits of children. This was integrated with their Global Perspectives curriculum. 42% of children were not regularly reading at home. Current reading proficiency was assessed using the **Fountas & Pinnell reading assessment** This provided baseline data on fluency, comprehension, and reading stamina, helping identify students needing targeted support.

Student Conversations and Habit Mapping

Informal conferences were conducted with each student to understand their reading habits at home, the time they spent on reading, and their personal preferences. These conversations helped uncover emotional and behavioural barriers—such as reading feeling like "a task".

Creating a Cosy, Inviting Reading Environment

A **cosy reading corner** was set up to shift the perception of reading from a chore to a relaxing choice. Soft seating, curated book baskets based on interests, and visual prompts made the space a low-pressure zone where students naturally gravitated during free time.

Choice-Based, Fun Reading Activities

A range of creative activities were introduced to make reading enjoyable and student-driven. These included:

- **Comic-strip creation** based on a chapter or story
- **Storyboards** to visually map narrative flow
- **Open, fun storytelling sessions** where students retold stories in their own way
- **"Book in a Bag" presentations**, encouraging students to represent a story using symbolic objects
- **Book-of-the-Month tracking**, where each student selected and completed a new book monthly
- **Periodic book reviews**, written or oral, every alternate month

Store telling Fridays

The key was consistency of tasks and not start and stop randomly. These tasks built ownership, allowed expression, and tapped into multiple intelligences.

Habit-Building Through Positive Reinforcement

No marks or grades were given, with the focus on children enjoying the book reading and A simple star- based tracking system was introduced to reinforce consistency. The aim was to build a routine through reinforcement without shifting focus away from intrinsic motivation.

Duration of Implementation

The interventions were implemented over **28 weeks**, with repeated cycles of reading, reflection, and creative response tasks. Environmental and motivational elements were maintained throughout the duration.

Data and Evidence Collection

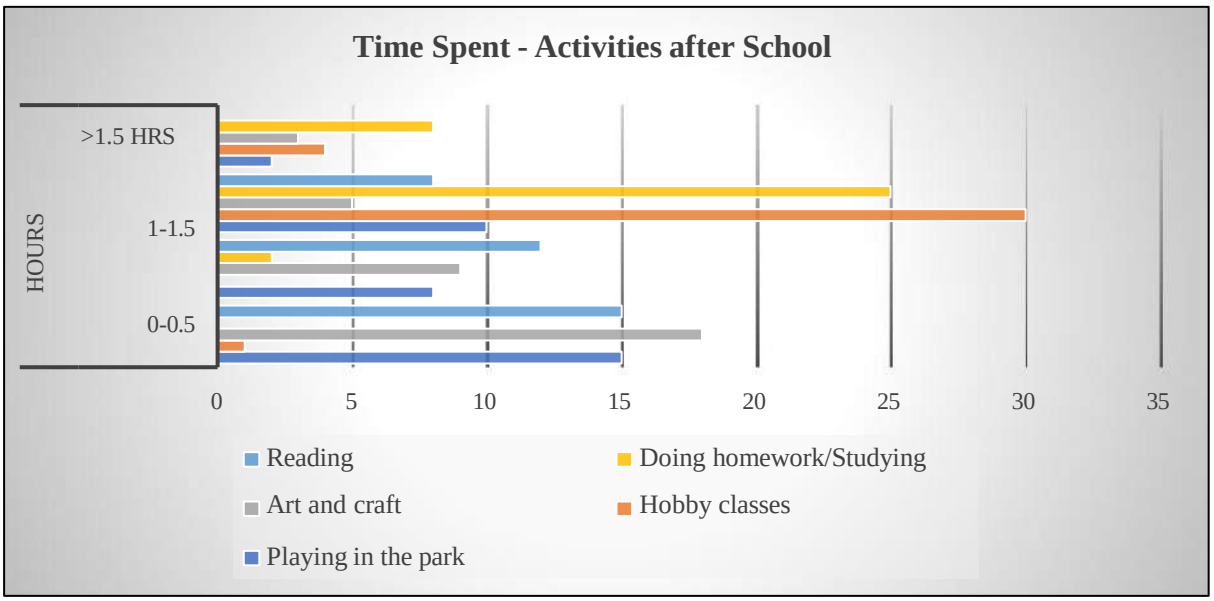
Multiple forms of evidence were collected to track progress and impact:

- **Observation notes** on student behaviour during independent reading
- **Reading assessment levels** (pre- and post-intervention, monthly tracking)
- Art Integration - Samples of student work comics, storyboards, book reviews
- **Student surveys** on reading enjoyment and preferences
- **Monthly** tracking sheets

3. Observation and Evidence

- Children inclined towards discussing books being read amongst peers when supported with activities for initial push.
- Survey revealed 42% of students did not read at all at home, instead most spent time in extra classes.
- Regular use of in-class library and discussion of books helped keep children involved.
- Parents asked children to read, often occupied themselves with other activities.
- Less confident readers were still hesitant. Positioning of level 1 books at eye level and reading with them with them at start of the day and break time helped but still not regular.

Indicator	Pre	Post	Change
% reading at home/school 1 book/month	42%	89%	+47 pp



- Reading scores used only for internal tracking to avoid students' mindset of this as another assessment. Helps identify trends and map with reasons e.g. low no. of books for CWSN kids, wrong level of book, genre of books being read.

Designing the survey

Taking peer choice

Book-in-a-bag

4. Reflection & Learnings

- Reading is increasingly becoming a chore rather than for pleasure and learning. I also used to more often than not fell into the trap of making it a task and give marks every time children read. Continue to remind myself to move away from this theory by slotting it in my time table consciously to NOT score and focus on the activity and anecdotes for improvement.
- Diligent tracking and analysis of data is critical for timely intervention and course correction. Anecdotes are also very useful for this. Next steps – to organize and maintain it on time every day. End of the week also is not sometimes useful.
- Parent partnership/feedback for long-term success.
- Position/setting of library critical to program success. When it was just a stack of books in a shelf, children did not pick up.
- Important to keep the excitement alive and keep books conversational rather than slotted and

fixed time, mix it up with creative activities for joy of reading. Use of technology helps - Intersperse with online tools like TEAMS reading learning accelerator.

- Making a connection with students through regular interaction helps understand their challenges and nudge them towards reading with appropriate choice of books.
- Need to strategize more for CWSN kids or children with low levels of reading. As per data, some still did not show any improvement or slipped. Only read with visual or verbal reminders. Weekly plan to be made and implemented.

5. Relevance

This study is important as a lot of educators are falling into the trap of having reading periods, each reading session being scored instilling a sense of fear of reading amongst young learners. This is resulting in children running away from books rather than embracing them. It highlights the important of being innovative, consistent and stick to basics to bring back the love of books.

6. Reference Materials & Data Evidence

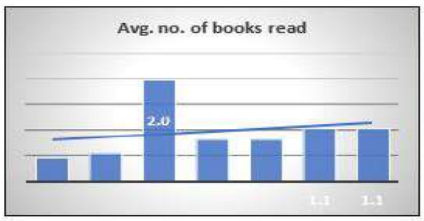
Reading and book review tracking

Book presentation with props

Story with shapes

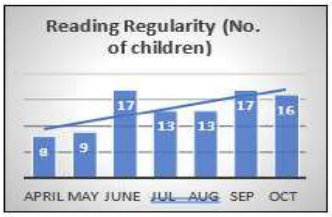
Group story telling

Interactive story-telling sessions



Increase in the average no. of books read/month

Rough Observation sheet



Reading at least 1 book/month

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