

Bridging Policy and Practice in India: Implementing IB Inquiry-Based Pedagogy in a Tier-3 CBSE School

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Abstract

This study investigates the feasibility of adapting International Baccalaureate (IB) inquiry-based pedagogical methods within urban CBSE middle-school classrooms to bridge the gap between the student-centred, critical-thinking and holistic-assessment vision of India's National Education Policy (NEP) 2020 and National Curriculum Framework for School Education (NCF-SE) 2023 and the traditional examination-driven reality that continues to influence many urban classrooms. Using a mixed-methods research design, data were collected from 20 teachers through structured questionnaires and in-depth interviews, complemented by direct classroom observations and teaching interventions across three Grade 6, 7 and 8 sections involving approximately 100 students in one urban CBSE school. The study examined six skill domains: critical thinking, collaboration, communication, problem-solving, creativity and self-directed learning, alongside student engagement and assessment practices. Findings indicate that teachers strongly recognise the value and policy alignment of inquiry-based approaches, while facing barriers including overloaded syllabi, examination-driven assessment systems, limited professional development opportunities and insufficient institutional support. Teachers receiving structured facilitation support demonstrated improvements in instructional practices, accompanied by higher levels of student engagement and conceptual participation. The study concludes that policy intent alone is insufficient to transform classroom realities. Meaningful change requires targeted teacher capacity building, competency-aligned assessment reform and institutional cultures that actively enable inquiry-based learning to take root and scale within existing urban CBSE frameworks.

Keywords: inquiry-based learning, IB pedagogy, CBSE, NEP 2020, experiential learning

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Introduction

India's National Education Policy (NEP) 2020 marks a significant policy shift towards holistic, competency-based and learner-centred school education. It emphasises critical thinking, creativity, problem-solving, conceptual understanding, experiential learning and the development of learners who can apply knowledge meaningfully. The National Curriculum Framework for School Education (NCF-SE) 2023 provides a curricular and pedagogical framework through which these aspirations can be translated into school practice. The policy direction therefore creates a strong rationale for moving beyond instruction dominated by memorisation and recall.

However, policy aspiration and classroom implementation do not automatically move together. Teachers in examination-oriented contexts must work within prescribed syllabi, fixed academic calendars, expectations of curriculum completion and assessment systems that may continue to reward recall. These pressures can reduce the time available for questioning, investigation, discussion and reflection. The resulting gap is not simply a pedagogical problem; it is an implementation problem involving curriculum, assessment, teacher capacity and school culture.

Recent literature reinforces this concern. Rajesh (2026) argues that enquiry-based learning can address the gap between what students learn and their ability to apply knowledge, while identifying systemic barriers to wider adoption. Pandey (2025) reports teacher concerns involving workload, practical training, resources and examination alignment. Karmakar (2025) similarly identifies teacher-capacity, infrastructure and assessment challenges in implementing NEP 2020. These studies provide a useful context for examining inquiry adoption in an urban CBSE setting.

This study explores whether selected pedagogical principles associated with IB inquiry-based learning can be adapted within existing CBSE classrooms. The purpose is not to replace CBSE with IB, but to examine whether inquiry, conceptual understanding, student participation and reflection can be embedded within existing national curricular content. The central concern is therefore how international pedagogical ideas can be contextualised to Indian classrooms while remaining aligned with NEP 2020 and NCF-SE.

Review of Literature

Rote Learning and Inquiry Adoption

Rajesh (2026) describes the persistence of rote learning in India as a barrier to transferable learning and argues for wider adoption of enquiry-based approaches. The paper also highlights governance and stakeholder-agency issues. For the present study, this is significant because inquiry requires teachers to make professional decisions about questions, scaffolding and learning experiences rather than merely follow a fixed sequence of information delivery.

Pandey (2025), drawing on qualitative evidence from 120 teachers in Uttarakhand, identifies infrastructure and resource constraints, teacher workload and limited practical training, and misalignment with high-stakes assessment as barriers to inquiry-based learning. Although the present study is located in an urban CBSE school, the assessment and professional-capacity issues are relevant across contexts. Karmakar (2025) further connects NEP 2020 with

constructivist and social-constructivist approaches and identifies teacher capacity and rigid assessment as implementation challenges.

Experiential and Subject-Based Pedagogical Shifts

Bahadur and Singh (2025) discuss a shift in mathematics education from formula memorisation towards conceptual visualisation and active inquiry. Mondal and Bhat (2026) emphasise practical work, experimentation and experiential learning in science education. Together, these studies support a broader principle: learners require opportunities to investigate, apply and discuss concepts rather than only receive information.

Teacher Capacity and Assessment

Panda and Lenka (2026) emphasise continuous professional development and the development of teacher capacity under NEP 2020. Banwari (2025) similarly identifies professional learning and educational resources as important for pedagogical innovation. Inquiry-based teaching requires practical competence in questioning, scaffolding, discussion management and formative assessment. Assessment is equally important. Nayak (2024) discusses the movement towards multidimensional assessment and the 360-degree progress card under NEP 2020. If classroom pedagogy promotes reasoning but assessment rewards primarily recall, teachers receive contradictory signals.

The wider inquiry literature also supports structured guidance. Lazonder and Harmsen (2016) found that the effects of inquiry learning vary with the guidance provided. This study therefore treats inquiry as structured exploration rather than unguided discovery.

Research Questions

1. How feasible is it to adapt IB inquiry-based pedagogical methods within urban CBSE middle-school classrooms?
2. How do inquiry-oriented interventions influence student engagement and the development of critical thinking, collaboration, communication, problem-solving, creativity and self-directed learning?
3. What systemic barriers do teachers experience when transitioning from traditional instructional approaches towards inquiry-based pedagogy, and what support structures are required?

Methodology

Research Design

A mixed-methods design was used, combining structured teacher questionnaires, in-depth interviews, direct classroom observations and teaching interventions. The design enabled the study to consider teacher perceptions alongside classroom-level evidence of implementation.

Participants and Setting

The study was conducted at Helios Sadineni Chowdaraiah Futuristic School in Chilakaluripet, a Tier-3 town in Andhra Pradesh, India. The student component involved approximately 100 learners across three Grade 6, 7 and 8 sections. Twenty teachers participated through structured

questionnaires and in-depth interviews. The study is therefore intended as a contextual investigation of feasibility rather than a statistically generalisable study of all CBSE schools.

Data Collection and Analysis

Table 1

Summary of the Study Design and Data Sources

Component	Scope	Purpose
Teacher questionnaires	20 teachers	Perceptions, barriers and perceived outcomes
In-depth interviews	20 teachers	Implementation experiences and support needs
Classroom observations	Grades 6–8; ~100 students	Engagement, questioning, collaboration and conceptual participation
Teaching interventions	Three middle-school sections	Feasibility of inquiry within existing CBSE content

Teacher questionnaires examined perceptions of inquiry, student engagement, critical thinking, collaboration, communication, creativity, self-directed learning, curriculum pressure, assessment expectations, professional-development needs and institutional support. Interviews explored the difference between recognising the value of inquiry and implementing it consistently. Classroom observations focused on questioning, participation, peer interaction, teacher questioning, conceptual discussion, collaboration, application and reflection. The available study materials report qualitative and structured findings but do not provide numerical effect sizes or a controlled comparison; consequently, the findings are interpreted as contextual evidence rather than causal estimates.

Pedagogical Intervention

The intervention followed an adaptation rather than replacement model. Existing CBSE topics were retained while the learning process was redesigned around provocation, questioning, investigation, conceptual clarification, application and reflection. The teacher remained responsible for academic rigour and scaffolding while students received greater opportunities to investigate ideas and articulate understanding.

Story-Based Inquiry in Civics

One intervention used a story-based approach to introduce concepts concerning forms of government. Rather than beginning only with definitions, the narrative provided a provocation through which students considered power, participation and decision-making. Students then compared systems, discussed the distribution of power and connected their reasoning to formal civic concepts. The sequence moved from experience and questioning towards conceptual understanding.

Six Skill Domains

The study examined critical thinking, collaboration, communication, problem-solving, creativity and self-directed learning. These were considered alongside engagement because inquiry is expected to change not only what students learn but how they participate in learning. Observation therefore considered whether students asked questions, explained reasoning, interacted with peers and applied ideas.

Findings

Teacher Recognition of Inquiry

Teachers strongly recognised the value of inquiry-based learning and its alignment with NEP 2020 and NCF-SE. They associated inquiry with deeper conceptual learning, critical thinking, participation and transferable skills. This suggests that the principal obstacle was not a rejection of learner-centred education, but the conditions under which teachers were expected to implement it.

Curriculum and Time Pressure

Teachers consistently identified syllabus load and curriculum-completion pressure as major constraints. Inquiry requires time for students to formulate questions, investigate, discuss and reflect. In tightly scheduled academic contexts, teachers may therefore perceive inquiry as difficult to sustain even when they value it.

Examination-Driven Assessment

Assessment emerged as another significant barrier. Teachers reported tension between inquiry-oriented learning and examination systems that can prioritise predictable recall. If teachers expect students ultimately to be judged through conventional examinations, they may feel pressure to prioritise content coverage and direct instruction. This finding is consistent with the assessment concerns identified by Pandey (2025) and the reform direction discussed by Nayak (2024).

Professional Development and Facilitation

Teachers who received structured facilitation support demonstrated improvements in instructional practices. Practical support in framing questions, sequencing activities and connecting inquiry to curricular objectives made implementation more manageable. This indicates that professional development should move beyond explaining the theory of inquiry and provide teachers with opportunities to design, implement and refine actual lessons.

Student Engagement and Conceptual Participation

Classroom observations indicated higher levels of student engagement and conceptual participation during structured inquiry-oriented activities. Students had more opportunities to ask questions, discuss ideas, compare perspectives and articulate reasoning. These observations should not be interpreted as proof of a causal effect because the study did not employ a controlled experimental design or report effect-size statistics.

The Six Skill Domains in Practice

The six domains provided a useful lens for interpreting classroom activity. Critical thinking was reflected in comparison and justification; collaboration in peer discussion; communication in explanation; problem-solving in applying concepts; creativity in generating responses; and self-directed learning in students' increasing responsibility for questions and reflection. The findings therefore suggest that inquiry can create a common classroom structure through which several competencies are practised simultaneously.

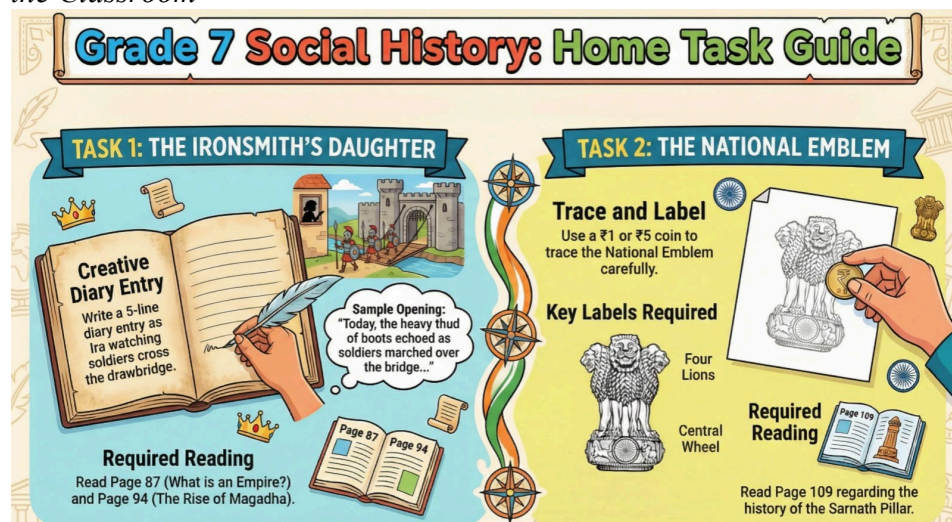
From Classroom Inquiry to Home-Learning Inquiry

A particularly visible feature of the implementation at Helios School was that inquiry was not confined to the classroom period. The same inquiry logic was extended into home-learning tasks so that students could observe, question, investigate, apply, communicate and act beyond the textbook. The tasks were deliberately designed as short, visually structured prompts rather than as conventional instructions to read a chapter and answer questions. This is important in a Tier-3 town context because the approach used familiar surroundings, family conversations, local civic life, weather observations, everyday environmental choices and accessible materials as learning resources.

The home-learning materials also show a form of digital and visual task design. The Grade 6 social task sheet, for example, asks learners to conduct a local-needs survey, identify a local elected representative and ask family members about participation in a Gram Sabha or community meeting. The Grade 7 geography tasks ask learners to keep a 24-hour weather and wardrobe diary, construct a simple rain gauge, record rainfall and observe wind. The Grade 7 social-history task asks learners to write a creative diary entry from a historical perspective and trace and label the national emblem using a coin. These are not simply decorated worksheets: the visual layout functions as a scaffold that makes the inquiry question, procedure, evidence to collect and expected product visible to the learner (Figure 1).

Figure 1

Digitally Designed, Illustrated Home-Learning Tasks Used to Extend Inquiry Beyond the Classroom



The environmental task provides another example. Students are first prompted to think about the impact of oceans and then distinguish positive and negative impacts before proposing one simple action. The “Planet Protector Pledge” converts that reflection into a personal commitment, such as turning off the tap while brushing or reducing plastic-bag use. A handwritten student response to a real-life complaint about an unsafe or poorly maintained public space provides a further example of students moving from observation and concern to written communication and a possible civic response (Figure 2). The significance of these tasks is therefore pedagogical: the assignment itself becomes part of the inquiry cycle rather than a post-lesson recall exercise.

Instructions:

- Write a short paragraph (3–5 sentences).
- Explain the impact clearly.
- Suggest one simple action you or your family can do to support the positive impact or reduce the negative one.

The diagram illustrates the flow of information and actions. A box labeled 'impact of oceans' has a downward arrow pointing to a globe and a rightward arrow labeled 'positive' pointing to a box labeled 'Pollution'. From the 'Pollution' box, a downward arrow labeled 'simple action' points to a red circle with a diagonal line through it, containing a yellow plastic bag. A curved arrow labeled 'negative' points from the 'Pollution' box back to the globe.

Example:

If you choose *'pollution'*, you might suggest:

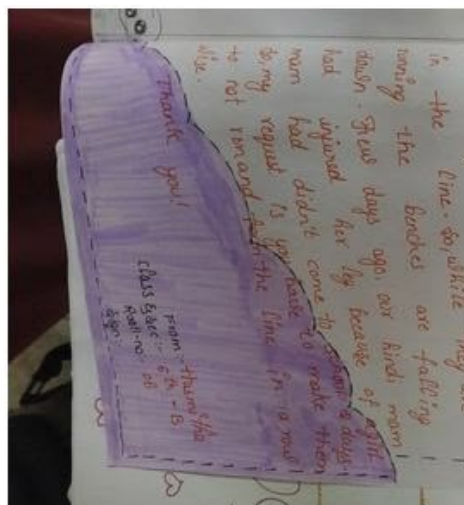


Table 2
Inquiry-Cycle Evidence Across Classroom and Home Learning

Inquiry phase	Practical evidence from Helios School implementation	Competencies made visible
Tuning in	Environmental pledge; local government and community prompts; historical diary provocation; weather observation	engagement, prior knowledge, questioning
Questioning	Local-needs survey, voter check, impact-of-oceans prompt, teacher-guided inquiry questions	critical thinking, communication
Finding out / investigating	Family/community conversations, required reading, weather diary, rainfall measurement, wind observation	self-directed learning, problem-solving
Sorting and organising	Recording information, distinguishing positive/negative impacts, tracing and labelling, comparing observations	critical thinking, conceptual understanding
Going further / applying	Connecting concepts to local government, environmental behaviour, weather processes and historical perspectives	application, creativity, transfer
Making conclusions	Short explanatory paragraphs, diary entries, reflections and written responses	communication, reasoning, reflection
Taking action	Planet Protector Pledge; proposing simple family actions; communicating a local concern	agency, responsibility, civic participation

Discussion

The findings indicate that inquiry adoption in CBSE classrooms is primarily an implementation challenge. Teachers recognise its value, yet curriculum pacing, examination expectations and limited professional support make conventional instruction easier to sustain. This aligns with Rajesh (2026), Pandey (2025) and Karmakar (2025), while also supporting the broader direction of NEP 2020 and NCF-SE.

IB Principles Within CBSE

A central implication is that curriculum adoption and pedagogical adaptation should be distinguished. The study does not suggest that CBSE schools should become IB schools. Instead, selected IB principles—questioning, conceptual understanding, reflection, student participation and structured inquiry—can be adapted within CBSE content. This creates a potentially more feasible route to pedagogical change because schools can retain their curricular obligations while changing how learning is experienced.

Teacher as Facilitator

Inquiry does not reduce the importance of the teacher. Effective inquiry requires teachers to design meaningful questions, activate prior knowledge, anticipate misconceptions, provide scaffolding, manage discussion and decide when explicit teaching is necessary. The teacher's role changes from primarily transmitting information to designing and facilitating learning while maintaining academic rigour.

Assessment Alignment

Assessment must support the same competencies that pedagogy seeks to develop. If students are taught to analyse, discuss and apply knowledge but are assessed mainly through recall, a structural contradiction remains. Formative questioning, performance tasks, portfolios, reflection and application-based questions can complement conventional assessment and make competency development more visible.

Teacher Development and School Culture

Professional development should be sustained and classroom-based. A practical cycle could involve understanding inquiry, observing examples, co-planning a lesson, implementing it, reflecting on student responses, receiving peer feedback and refining the lesson. School leaders also need to provide planning time and create conditions in which teachers can experiment, reflect and improve.

Implications for Practice

Teachers can begin with small curriculum-connected changes rather than redesigning every lesson. A familiar topic can be reframed around an authentic question, followed by structured investigation, teacher clarification, application and reflection. School leaders can support this through collaborative planning, peer observation and assessment practices that value reasoning. Teacher education providers can strengthen preparation by making inquiry training practical and classroom-based. Policymakers should continue aligning curriculum, teacher

development and assessment so that policy expectations are not undermined by conflicting institutional incentives.

Recommendations

1. Develop sustained, practical professional development focused on inquiry-based lesson design and implementation.
2. Provide teachers with adaptable inquiry questions, scaffolds, activities and assessment rubrics connected to existing CBSE content.
3. Strengthen assessment practices so that reasoning, application, reflection and other competencies are assessed alongside knowledge.
4. Protect collaborative planning time for teachers to design and refine inquiry lessons.
5. Encourage school leaders to support pedagogical experimentation and peer learning.
6. Adapt international pedagogical approaches to Indian curricular and cultural contexts rather than importing complete curricular models.
7. Conduct larger, multi-school and longitudinal studies to examine sustainability and student outcomes.

Limitations

The study was conducted in one urban CBSE school and therefore should not be statistically generalised to all CBSE schools. The teacher sample comprised 20 participants and the student component involved approximately 100 learners across Grades 6–8. The study used observations and interventions rather than a randomised controlled design. The available study materials do not provide numerical effect sizes, pre/post-test scores or detailed instrument reliability statistics. Accordingly, claims about improved engagement and instructional practice are interpreted as contextual evidence rather than causal estimates.

Conclusion

Ultimately, bridging policy and practice requires coherence between curriculum, pedagogy, assessment and teacher capacity. NEP 2020 and NCF-SE provide the policy direction, while inquiry-based pedagogy offers a practical pathway for developing critical thinking, collaboration, communication, problem-solving, creativity and self-directed learning. The experience documented in this study suggests that meaningful change is possible when inquiry is structured through a clear cycle, embedded in everyday learning, connected to authentic responsibilities and supported by continuous teacher capacity building and assessment reform.

The study therefore recommends that government agencies, local educational bodies and school leadership provide sustained and periodic capacity-building opportunities for teachers and facilitators. Professional learning should be practical, contextualised and followed by opportunities for reflection, classroom application and feedback. Periodic review and adjustment of curriculum, assignments, assessment practices and teacher-support mechanisms should accompany the implementation so that inquiry is not introduced as a one-time initiative but developed as a sustainable school practice.

A major barrier identified through the implementation was a knowledge and capacity gap. Teachers and facilitators may value inquiry-based learning but still require practical knowledge of how to design inquiry questions, scaffold student thinking, manage collaborative learning, assess competencies and move through an inquiry cycle effectively. Teacher and facilitator

capacity building should therefore be treated as a central component of implementation rather than an optional professional-development activity.

The findings suggest that assessment must be considered alongside pedagogy when inquiry-based learning is implemented. Periodic examinations and conventional assessment practices should not operate in isolation from the competencies that inquiry seeks to develop. A more balanced approach should combine ongoing formative assessment, daily learning evidence, reflection, application and competency-oriented tasks with required summative assessment. Such alignment can reduce the tension between inquiry-based classroom practice and examination expectations.

The intervention also sought to connect learning with real-life responsibilities and the Sustainable Development Goals (SDGs), allowing students to understand that learning extends beyond academic tasks. Assignments and learning checks were integrated into students' day-to-day learning rather than being concentrated only in periodic assessment points. This approach enabled more continuous observation of students' understanding, participation and skill development and provided opportunities for timely feedback and adjustment.

The implementation followed an inquiry cycle beginning with tuning in and moving through questioning, investigation, collaboration, application and reflection. This cycle provided students with repeated opportunities to engage with concepts rather than simply receive information. Across the implementation, the researcher observed an approximately 60% improvement in students' critical-thinking performance. This figure is reported as an observation from the implementation and should be interpreted in relation to the study's context and available assessment evidence rather than as a generalisable causal effect.

This study examined the feasibility of adapting IB inquiry-based pedagogy within urban CBSE middle-school classrooms in alignment with NEP 2020 and NCF-SE. Based on the classroom implementation and observations, the study indicates that inquiry-based learning can be meaningfully embedded within the CBSE context when it is deliberately structured, supported and connected to the existing curriculum.

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Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

Generative AI and AI-assisted technologies were used during manuscript preparation to support language organisation, readability and editorial formatting. The ideas, procedures, findings, analyses, and discussion are originally written and derived from careful and systemic conduct of the research. AI-assisted tools were not used to fabricate participant responses, research observations or empirical data. Grammarly and ChatGPT were used to support

language organisation, readability and editorial refinement, while NotebookLM was used to support the organisation and review of research documents.

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Appendices

Appendix A

Teacher Questionnaire–Key Domains

The questionnaire examined teacher understanding of inquiry-based learning; perceived benefits for engagement and higher-order thinking; confidence in implementation; curriculum constraints; assessment pressures; professional-development needs; institutional support; and the six skill domains of critical thinking, collaboration, communication, problem-solving, creativity and self-directed learning.

Classroom Observation Focus

Observation focused on student questioning, participation, peer interaction, teacher questioning, opportunities for student choice, conceptual discussion, collaborative learning, application, reflection and teacher scaffolding.

Appendix B

Additional Classroom and Home-Learning Evidence

These materials supplement the evidence discussed in the manuscript. They include digitally designed home-learning task sheets, an environmental action pledge, and a student handwritten response. The materials are presented as evidence of inquiry-oriented task design and enactment rather than as decorative worksheet examples.

Figure 3

Digitally Designed and Handwritten Home-Learning Evidence Used to Extend Inquiry Beyond the Classroom



Previously Documented Classroom Evidence

The following composite retains the classroom photographs supplied for the earlier manuscript and shows additional evidence of questioning, civic participation, collaboration, application and reflection.

Figure 4

Previously Documented Classroom Evidence: Selected Activities

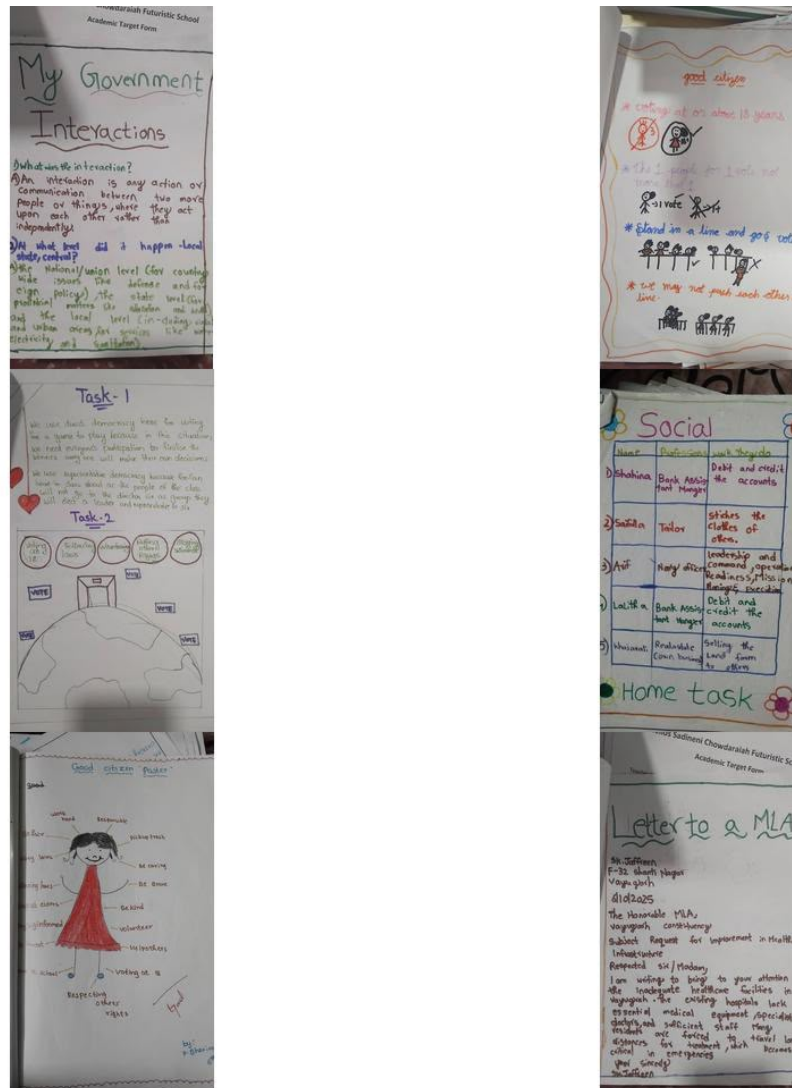


Figure 5
Previously Documented Classroom Evidence: Additional Selected Activities

