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Exploring Critical Thinking Dispositions in Primary School Children

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Abstract

The development of critical thinking has widely been understood as a 'skill-set' that evidently develops at the formal operational stage, when the child can think abstractly. The present study seeks to explore evidence of critical thinking dispositions in children aged 5 to 12 that can be fostered and refined over time in critical thinking ability. A total of 10 primary school children from grades two, three, four and five were selected through purposive random sampling based on their academic class and language expression. The children were assessed through guided open-ended tasks, including storytelling, picture analysis, and dilemma situations. The recorded interviews and focus group discussions were analysed through a qualitative task analysis method. The results showed that children as young as five years old showed dispositions towards critical analytic thinking, with adults playing a major role in scaffolding their thinking. The findings suggest that critical thinking dispositions can be fostered from an early age, as early as five years.

Keywords: *critical thinking; dispositions; primary school children; task analysis*

Introduction

From birth, humans strive to understand the world around them. Young children, in particular, are exceptionally curious about their newly discovered environment. Infants start by processing sensory information to familiarise themselves with their surroundings. As they grow, they begin to engage with more complex concepts. However, during this developmental process, they are often given guidelines and rules about what to think and how to think, which can restrict their cognitive development. By adulthood, many individuals have become compliant and passive, accepting authority without question and adhering to routine. In this context, critical thinking becomes essential. It enables individuals to challenge authoritative assertions and examine reality from multiple perspectives, leading to a deeper and more comprehensive understanding.

As the world enters the era of artificial intelligence, students no longer face the difficulty of accessing the time required for reflection that guarantees the appropriation of information. Students also need to be protected from superficial interpretations of the content. Therefore, it is vital to cultivate a strong foundation in critical thinking from early childhood, when children are highly observant and inclined to ask "why" questions. As Malaguzzi (in Edwards et al., 2011) notes, children are born with an extraordinary ability to question, view the world from various perspectives, and explore their environment in diverse ways.

The focus on critical thinking in education began with John Dewey's proposal to empower children with critical thinking, which helps them become clear-minded and democratic members of society (Dewey, 1933). This becomes possible when students are motivated to identify the most distinctive feature of a problem using the given information. Jean Piaget (1962) held that, by the preoperational stage of cognitive development, which occurs between the ages of 2 and 7, children are capable of symbolic thought, that is, creating mental images of objects and storing them in memory for later use. Children's imagination and creativity are correlated with their capacity for symbolic thinking. The foundations of critical thinking begin to emerge at this point. Empirical evidence indicates that children can begin to display dispositions towards critical thinking as early as age 3, when

they can engage in symbolic thought (Heyman, 2008; Hubscher Esteve-Gibert, Igualada & Prieto, 2017).

The development of critical thinking is a priority under Agenda 2030, as outlined by UNESCO (2016) under Sustainable Development Goal 4 (SDG4). In India, NEP 2020 placed special emphasis on developing critical thinking skills as part of twenty-first-century skills. These approaches have led to major modifications in the curriculum and school education, making research into thinking skills relevant and essential for the development of educational approaches. Given the technological advances that have increased dependence on applications, AI, and the web, this further necessitates the development of critical thinking to help interpret reality autonomously and avoid being preyed upon by technology.

This paper explores the concept of critical thinking and its dispositional aspects, analysing data from children aged 5-12 through a set of cognitive tasks prepared by the researcher. It presents an out-of-classroom study of critical thinking, in contrast to traditional classroom intervention studies that view its development solely as the school's responsibility. The paper finally discusses cultivating these dispositions related to critical thinking from an early age and the responsibility of adults at home or at school for their development.

Theoretical Framework

Critical Thinking

Introduced 2,500 years ago by the Greek philosopher Socrates, critical thinking is not a new concept. Socrates philosophised about a method of question-probing and emphasised the importance of analysing and evaluating ideas with sufficient evidence (Emerson, 2013).

Often referred to as ‘careful, goal-directed’ thinking, Critical Thinking is a form of thought that requires higher-order cognition, such as concept formation, decision-making, evaluation, and reflection. The process of thinking critically involves carefully exploring one's own thought processes to clarify understanding and make more informed decisions.

Before the term itself was coined, different terms had been used to describe critical thinking. In the past, ‘critical thinking’ and ‘problem solving’ were two names for the same thing. Bloom's taxonomy of educational objectives used the phrase “intellectual abilities and skills” to refer to what had previously been called "critical thinking" by some, "reflective thinking" by Dewey and others, and "problem solving" by others (Bloom et al. 1956).

With various definitions and the precise abilities covered by the term 'critical thinking', it can be described as a careful goal-directed process which is self-regulated and independent in nature and requires reflection on all possible sides of an issue to make a decision whereby one is self-correcting, sensitive to the context and open to disconfirmation of one's own ideas through making claims with evidence and inference from available facts. (Bailin et al., 1999; Ennis, 1985; Facione, 1990; Paul, 1992).

Critical Thinking Dispositions

While there have been different conceptions of Critical Thinking, most conceptualisations have been framed in terms of broader concepts such as problem-solving, decision-making, reasoning, and standards of adequacy and accuracy. The major conceptions of critical thinking present it as a skill or skill set, which can give the impression of a well-developed, unapproachable phenomenon. In reality, many people may never develop critical thinking as a skill, yet they more or less engage in it. Therefore, critical thinkers have argued that critical thinking ability alone is insufficient and that critical thinking dispositions are also required (Facione, 1995; Ennis, 1996). Critical thinking dispositions refer to an individual’s consistent internal motivation to engage in critical thinking. It reflects an individual's attitude and habits of engaging critically. Thus, critical thinking involves both abilities and dispositions/propensities (Siegel 1999; Facione 2015; McPeck 2016). It implies that an individual may possess critical-thinking skills but lack critical-thinking dispositions. An individual may be capable of making logical arguments but may avoid questioning given information, may resist feedback, or may be biased. Similarly, a child may compare two events but may lack the curiosity to engage deeply in a given situation. Thus, Robert Ennis (1996) argued that being a critical thinker requires both ability and dispositions.

Research in the field of cognitive development supports the view that, to think critically, one must cultivate the inclination to do so (Bailin et

al. 1999; Daly 2001; Facione et al. 1994). According to Facione et al. (1995), a critical thinker uses seven dispositions to develop or make judgments. Peter Facione, along with other experts from different disciplines, proposed an overall disposition towards critical thinking that consists of seven sub-dispositions: Truth-seeking, Open-mindedness, Analyticity, Systematicity, Self-confidence, Inquisitiveness, and Maturity (Facione & Facione, 1993).

The following Delphi description of the attributes of the mind of an ideal critical thinker, what some have called "The Critical Spirit", about expert consensus, is as follows:

"The ideal critical thinker is habitually inquisitive, well-informed, trustful of reason, open-minded, flexible, fair-minded in evaluation, honest in facing personal biases, prudent in making judgments, willing to reconsider, clear about issues, orderly in complex matters, diligent in seeking relevant information, reasonable in the selection of criteria, focused in inquiry, and persistent in seeking results which are as precise as the subject and the circumstances of inquiry permit" (APA, 1990, p. 3).

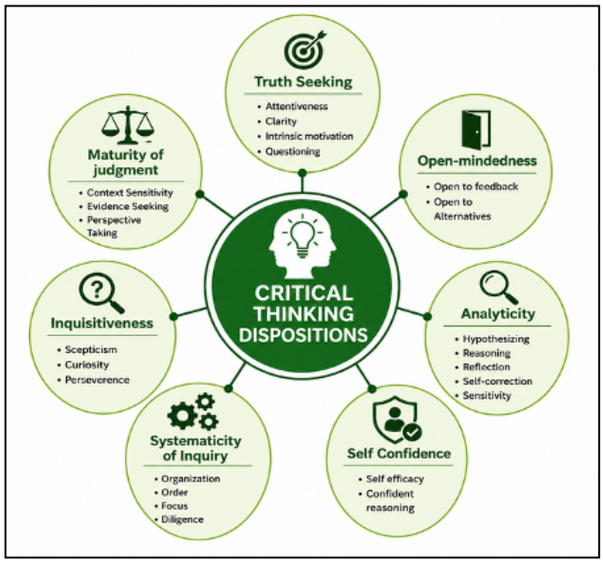


Figure 1. *Representation of seven critical thinking dispositions proposed by Facione (2007), including the disposition towards creativity*

Perkins, Jay & Tishman (1993) describe thinking dispositions as ongoing tendencies that guide intellectual behaviour. They propose a theory of good thinking based on dispositions. They offer a triadic theory of critical thinking dispositions, suggesting that these dispositions have three components, each equally important. These components are (1) sensitivity to the occasion and context, (2) inclinations, which may reflect motivation, habit, policy, or other factors, and (3) abilities of critical thinking. All three factors play equally important roles in good thinking.

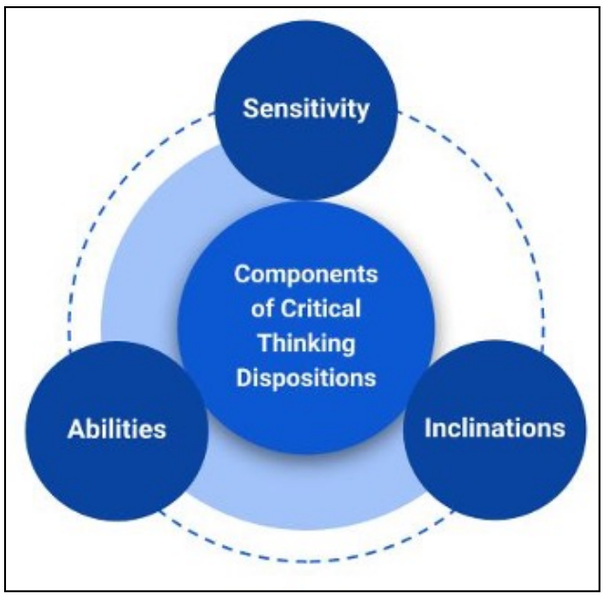


Figure 2. *Representation of 3 components of critical thinking dispositions proposed by Perkins, Jay & Tishman (1993)*

Policy Frameworks promoting Critical Thinking

The National Education Policy (NEP 2020, 4.5, 0.12) emphasises the development of each individual's creative potential. In addition to the 'foundational capacities' of literacy and numeracy, it highlights the need to develop 'higher-order' cognitive capacities, such as critical thinking and problem-solving. It aims to move towards a more competency-based assessment system that would promote learning and development and test higher-order skills such as analysis, critical thinking, and conceptual clarity. The National Curriculum Framework (2005), in its Aims of Education, presents a more flexible, dispositional conception of critical thinking, including independence of thought and action, pointing to a capacity for carefully considered, value-based decision-making, both independently and collectively; a sensitivity to others' well-being and feelings, together with knowledge and understanding of the world, forming the basis of a rational commitment to values; and learning to learn and the willingness to unlearn and relearn, which are important as means of responding to new situations flexibly and creatively. It also expresses the need for a critical framework that

would help children see social issues from different perspectives and understand how these issues connect to their lives. Finally, cultivating critical thinking in early childhood involves varied learning experiences that enable the child to explore, question, reason, reflect, make sense, and develop values that support autonomous decision-making. Such an initiative would cultivate tendencies and dispositions from an early age, enabling young minds, which are not yet fully indoctrinated by society's unquestioned value system, to develop perspectives essential to survival and thriving.

Research Gap

Critical thinking has long been recognised as a fundamental educational goal. Early work by Dewey (1933) emphasised reflective thinking as essential for informed judgement, while Ennis (1996) and Facione et al. (1995) highlighted the importance of both critical thinking skills and dispositions. Research in developmental psychology suggests that the foundations of critical thinking emerge in early childhood. Empirical studies by Heyman (2008) and Hübscher et al. (2017) support this, indicating that children as young as three years can demonstrate early forms of critical thinking through questioning, evaluating information, reasoning, and interpreting communicative cues.

A systematic review by O'Reilly, Devitt, and Hayes (2024) found that young children can demonstrate reasoning, problem-solving, and meaning-making skills, and that classroom dialogue, questioning strategies, and story-based pedagogies can support the development of critical thinking. Moreover, most studies have focused on observable thinking skills rather than on the dispositional dimensions that motivate children to think critically. The National Education Policy (2020) recommends experiential learning, inquiry-based learning, problem-solving, critical thinking, and creativity as essential competencies for the twenty-first century. There is ample research on foundations, literacy, numeracy, school readiness, and cognitive development. In contrast, comparatively little research has examined how children demonstrate critical thinking dispositions, such as truth-seeking, analysis, inquisitiveness, decision-making, reflective judgement, and openness, at the primary level. Secondly, limited research has explored these dispositions outside the classroom, in and around school environments, such as children's parks.

Therefore, a significant research gap remains in understanding the nature, manifestation, and cultivation of critical thinking dispositions among children in the Indian context. The present study seeks to address this gap by exploring critical thinking dispositions among children in and out of school settings. The study aims to contribute to the theoretical understanding of critical thinking in childhood, with practical implications aligned with pedagogical practices for nurturing critical thinking ability.

Research Questions

Focusing on critical thinking in children aged 5-12 years, the research addressed the following questions:

1. How do children demonstrate dispositions for critical thinking when they interact and engage in and outside the school settings?
2. What aspects of critical thinking dispositions are evidenced while engaging with designed tasks?
3. What can teachers do to nurture critical thinking dispositions and critical thinking ability?

Methodology

The study employs qualitative research methodology to allow the children to express themselves spontaneously. The open interaction outside the classroom between the researcher and the children helped create a familiar environment, supported by carefully designed questions and simulations. Their responses were observed and tapped for analysis.

Participant and Context

The participants in the study were 10 children in primary classes (grades 1st to 5th), aged 5 to 12 years at the time of data collection. Children were selected by school year, and data were collected both within and outside school settings, but not in formal classrooms. They were approached in school playgrounds with their teachers' permission, or in parks in the presence of their guardians. Formal permission from the school principal was obtained to adhere to research ethics. The procedure continued only if a child was interested in listening or engaging in discussion.

Research Design and Data Collection

The study advocates a qualitative, exploratory research design to investigate evidence of critical-thinking dispositions among primary school children. The method is more inductive, as it seeks to explore a lesser-known or under-researched phenomenon and uses specific scenarios to reach a more generalised conclusion about it. Children were engaged in a guided, open-ended assessment comprising three tasks - Storytelling, Picture analysis, and Dilemma situation. Data were collected through in-depth, open-ended interviews, focus group discussions (FGDs), and observations, and procedures were conducted both in and out of the school setting. The data were later organised by task and analysed according to the objectives set for each task.

Tasks Design for Data Collection

A total of three tasks were designed and shaped to facilitate the guided open-ended assessment. They included storytelling, picture analysis and dilemma resolution. The tasks remained the same for all the children selected from each grade, from 1st to 5th. Each task aimed to assess evidence of critical-thinking dispositions, with some weighted more heavily than others. While all the tasks remained the same throughout the age group selected, with the same pictures to be analysed and the same dilemmas to ponder, the stories changed with the child's context according to the child's age.

The first task, Storytelling, provided the children with context for assessing their understanding, reasoning, and problem-solving, with follow-up questions probing their thinking (Fahim, 2014). According to Temple (2015), when people engage with a story, form their own interpretations, and support them with reasons, they are engaging in critical thinking. The task was designed to engage children in the thinking process and observe their critical-thinking dispositions. The task was developed around seven critical thinking dispositions proposed by Facione (2007), examining dispositions that span the mental processes involved in critical thinking, including truth-seeking, open-Knowledge elicitation, data analysis, and knowledge representation are the three main elements of Cognitive Task Analysis. The process began with knowledge elicitation, followed by data analysis, and finally by the mindedness, analyticity, systematicity, self-confidence, inquisitiveness, and maturity of judgement.

In the second task, three pictures were shown to the respondents, who were asked to describe what they saw in each picture, then explain what they thought might be happening, or raise any questions they had about them. It assessed children's ability at different ages to go beyond the explicitly visible information, enabling them to think deeply about different aspects of the pictures and to develop hypotheses about the scenes depicted. This task sought to explore dispositions towards truth-seeking, analyticity and inquisitiveness.

The third task presented the children with situations in which a dilemma needed to be resolved. The situations remained contextual and related to children's daily life to encourage authentic engagement. The objective of the task was to engage children in decision-making, judgment-making, and problem-solving, thereby enabling the assessment of critical-thinking dispositions, including maturity of judgment, systematicity, open-mindedness, and truth-seeking.

Task Analysis Approach

The data collected from the guided open-ended assessment, conducted through interviews and focus group discussions, was organised into task-wise groups and analysed against the objectives set for each task. The analysis used a qualitative task analysis method. One purpose of task analysis is to inform instructional design decisions by examining the learning situations. To ascertain what is actually taught or learned, task analysis begins with a statement of learning goals (Hannum et al., 1999). It is not sufficient to merely observe people's activities and behaviours while they are engaged in complex tasks. It is also important to understand how people perceive the world, what they know, how they organise and structure information, and which concepts they understand better. Therefore, to examine and describe reasoning and knowledge, cognitive task analysis is used (Klein et al., 2006).

presentation of the findings. The data was analysed using specific objectives developed for each task. The analysis and findings focus primarily on the seven attributes used in the scales for measuring critical thinking

dispositions, as given by Facione in the California Critical Thinking Disposition Inventory (CCTDI, Facione, 1990). These attributes of mind of an ideal critical thinker are considered dispositions towards critical thinking, namely: Open Mindedness, Analyticity, Cognitive Maturity, Truth-seeking, Systematicity, Inquisitiveness, and Self-Confidence.

Data Analysis and Discussion

The primary objective of the study was to explore the critical-thinking dispositions of primary school children in an out-of-school context. This necessitated a research study aimed at fostering critical-thinking dispositions in school and home settings, such as parks where children in the vicinity come to play. Data were collected through interviews and focus group discussions, which were audio-recorded and later transcribed. Three tasks were conducted to explore and evidence children's critical-thinking dispositions.

Task 1: Storytelling

The first task of storytelling was designed to provide an engaging and stimulating opportunity for children to engage in cognitive processes and, in turn, observe their critical-thinking dispositions. Storytelling is widely understood as an effective pedagogical approach in which children can interpret information, connect stories and characters to experience, and reason within highly relevant contexts.

The first type of question in the task assessed the maturity of contextual understanding and comprehensive ability, which are the basis of any cognitive task. The second kind of question sought to assess the dispositions to apply content and contextual knowledge to analyse a situation. The third and fourth kinds of questions explored whether children were disposed towards analysis and judgement. The final kind of question attempted to engage children in creative thinking.

Some of the questions posed to the children were:

Q.1 Retell the story in your own words.

Q.2 Could the same strategy of saving be used if the leopard had caught the fox instead of the tortoise?

Q.3 Is it fair for the leopard to catch the tortoise to eat? Why?

Q.4 What might you see around if you were a fish?

The responses collected from the children are categorised in the following table, aligned with their dispositions and sub-dispositions.

Dispositions	Sub -Dispositions	Evidence
Truth seeking And Maturity	Contextual understanding and Knowledge	Comprehensive ability was observed in children as they retold the stories in their own words. They seemed attentive, they tried seeking truthness about the event and even retold the stories with clarity. Their narrations showed their effort to understand the what and why of situations and the characters involved in them. Facione (1990) supports truth seeking involves desire to understand the situation under given evidences.

Open -mindedness	Sensitivity	Children seemed Re-telling the story with their own empathetic perspective as a second-grade child said"choti machli bahut acchi aur samajhdar thi…… Isliye wo kehti hai main toh khush hu apne chotepan se" Here the child is able to imagine himself in the fish life situation evidencing emotional understanding; it is also a disposition called openness.
Analyticity	Hypothesising	A 4th grade chaild said "Mujhe lagta hai ki wo planning kar rahe the ek dusre ko tiger ya lion se bachaane ki". Such kind of hypothesis generation shows children ability to evaluate evidence and make logical explanations out of it.
Self- Confident	Confident with their own responses Openness to alternatives	Children were able to consider the possibility of responses. They respected other's opinions and supported them wherever needed. R1: hume jeev dikh rhe hain, octopus chote chote R2: octopus kafi bade hote hain R1: haan, chote bhi hote hain R2: dolphins bhi dikh rhe hain, small dolphins, big dolphins Such confidence in their viewpoints evidence the trust in themselves to make decisions.

Maturity of Judgement	Perspective taking Differences in judgement of the situation and empathy	The children seemed taking different perspective. They empathise with the characters and rationalized their responses. "Galat kiya, kyuki jaanwar jo hote hain wo bhi ek insaan hote hain. Unhe nahi khana chahiye" "Sahi kiya, kyuki humko bhookh lagti hai toh hum khana khate hain aur usko bhookh lagegi toh woh kaise khaega! Toh usne lomdi ko khaane ka faisla kiya kyuki wo kachue ko nahi kha paega (because of the shell)" This perspective of feeling others before making conclusions shows they are not self-centred. It also evidences the moral reasoning required for higher order thinking.
Analyticity	Providing clarification for the judgement Self-correction and self-reflection	"Main pahad par kyun chadhti jab hum pahad ke neeche ghum sakte hain. Aur wo (strange men) jab dikhte toh door se bhi toh dikhte…toh main wahan se chali jaati…..Haan par unke paas toh jaadu hai na wo kahin par bhi aa sakte hain, directly aa sakte hain, toh main bhaagne ki koshish karti." Their reasoning and explanation for their own views is an approach for reflecting and correcting themselves.
Maturity	Independent thinking, Fluency of ideas and Expression	Children were able to make dialogues for the characters, acting out the characters.

Table 1. *Responses of the students on the Critical Thinking Dispositions Dimensions and their analysis*

Throughout the engagement, children were attentive and focused on the task, which evidenced a disposition towards truth-seeking and intrinsic motivation to gain understanding or solve problems. The storytelling task clearly identified the seven elements of critical-thinking dispositions in children, as proposed by Facione (2007). This naturally confirms children's ability to think. The role of education is to nurture this seed of critical dispositions into critical-thinking ability.

Task 2: Picture Analysis

The picture analysis task provided children with stimulating pictures that would prompt them to analyse, think deeply about different aspects of the pictures, and develop hypotheses about them. This task sought to explore dispositions towards truth-seeking, analyticity and inquisitiveness.



Picture 1



Picture 2



Picture 3

The first picture shown to the children had two dimensions: the visible physical aspects and the more abstract aspects, which required developed abstract thought.

While a first grader explains the picture as, "wo seedhi se books par chadh rhe hain."

The second grader shows curiosity and willingness to seek truth and asks, "ye jo ladka hai, winner, wo wahan tak jeeta kaise hoga?" The child himself attempts to answer as he hypothesises, "Inki race ho rahi hogi aur ye aage nikal chuka hoga, baki sab peeche reh gaye honge.. Toh ye jaldi se apni seedhi upar lakar chadh gaya hoga."

A third grader describes the stack of books as 'jahaaj'.

On asking why he thinks so, they responded, "ye inhone iss liye banaya hai kyuki unhe naav banani hai lekin unke paas naav banane ka samaan nahi hai aur wo paper nahi faad sakte kyuki fir paap lagega isliye wo books se naav bana rahe hain." A fourth grader expresses with sensitivity as he takes the perspective of a character in the picture, "ye wala upar chadh chuka hai isliye khush hai, wo dono bhi use dekh ke upar jana chahte hain",

A fifth grader in the same picture shows confident reasoning as she points out, "Ye ek picture hai jisme ye books par chadh rahe hain, jo book mein stories hoti hai usme laga dete hain beech me, taki wo dikhe." The child shows evidence of sufficient content knowledge to reason confidently.

The above reasoning shows that children are making assumptions beyond what they see. In

this way, they are moving towards more abstract thought. The spontaneity in their responses reflects the openness crucial to thinking, imagining, and accepting their thoughts without judging them as right or wrong. This thinking, involving sensitivity, possibilities, and perspective-taking, expands as the children move into the upper

The second picture is intended to engage the child in imagination and hypothesising-

Looking at the picture, a first grader makes a judgment by projecting her own wants onto the character, ye ladki soch rahi hai ki ye doggy bhi padhai kare school me aur main bhi karu. When asked why the dog must be dreaming about studying, a second grader responded, "Taaki uski naukri lag jaaye." Here, the child makes a judgment by drawing an analogy from her own life, since she must have heard that children need to study to get a job in the future.

The third graders were more fluent in expression and language as they described the picture. While analysing the picture, the girls demonstrated what Bruner referred to as a 'community of learners' by completing each other's sentences and asking questions when needed. The children conversed among themselves, "This doggy can go to school." Another said,"Yes, he will study maths with us and can solve sums and subtraction." A third said,"When the teacher is going to ask questions, he will raise his hand and answer." The first one added, "Yes, yes, dogs are as intelligent as we are. They can not only study but also play football. It will be so much fun to play with the doggy."…. "Let us admit him to the class… Ha…ha…ha." Thus, the students reinforced each other's ideas, making the conversation fun and imaginative.

The fourth- and fifth-grade children were more fluent in expressing different perspectives on their analysis of the picture. When asked who is having the dream in the picture, a fourth grader responded, "Dono ko", but corrected himself after looking back at the picture, "Nahi, ladke ko aa raha hai sirf… uske sar se nikal raha hai na ye baadal sa". Fifth graders showed similar responses, first pointing to the child in the picture, then self-correcting based on the evidence. Children showed a disposition towards self-reflection and self-correction, with a willingness to seek the truth. Imagination allows the child to go beyond what is given and what they know and explore new ideas, which is the basis of critical thinking, going beyond the given. Older children had more developed language and vocabulary to express their thoughts and move beyond the visible perspective. They were more confident not only because of their knowledge of the tasks but also because of their language development and communication skills.

From the above task, it is evident that while the younger children were unable to analyse the abstract aspects of the pictures, they could only describe their empirical aspects. The older children moved from the empirical to the abstract elements in the pictures and looked at images from multiple perspectives. Abstract thought is one of the major critical-thinking abilities, allowing a person to look beyond what is visible and to consider different perspectives.

The third picture was included to help children understand sociological aspects, such as differentiation and social inequality.

While the younger children in the first and second grades could only grasp the concrete aspects of the picture, the older children could pick up some abstract concepts through their own experiences and understanding of similar contexts. One of the characters in the picture, with blond hair and fair skin, represented an upper-class child with a rich lifestyle, and the other two children, with darker complexions and uncovered bodies, represented the lower strata of society. Most of the children who attempted to analyse the picture understood it as a scene of play in which the three children are playing with a car. The older children were more attentive to the different gestures in the picture and concluded that the car belongs to one child who doesn't let the other play with it.

A first-grader described the picture as a scene from the play and the boy's blond hair as nothing more than sunlight reflecting off it. Similarly, the second grader described the picture as children playing with the car, and added that they were cleaning it: "ye teeno car ke saath khel rahe the, ye gandi(dirty) ho gayi to use nehla rahe hai," before explaining the process of car cleaning. The child here uses heuristics to approach problem-solving, that is, by explaining the picture.

When asked how they know the car belongs to the blonde boy, one girl replied, "Kyunki ye aameer hai, to inhone rok rakha hai ye gaareeb log meri car ko na chhute (touch)", highlighting their perception of societal hierarchy and differences. When asked why this boy has different-coloured hair, one girl responded spontaneously, "kuch log alag dikhne ke liye apne ballon ko bhi colour karwa lete hain", another girl added, "jo deewar par paint hota, wo bhi karwa lete hain", and the third girl contradicted, "deewar wala paint kaun karwata hai, apne baalon par?" This was followed by a loud burst of laughter. This conversation shows them as a community of learners who contribute to each other's learning by adding alternative ideas. The girls' openness to alternatives reflects their open-mindedness. When the girls were asked why the other two boys washed the car if it belonged to the blonde boy, one girl responded, "kyunki unhe paise milenge", which was followed by another question, "but the kids are very young to work", for which the girl said, "mam, ye gaareeb hai, to inhe kuch to karna padega na." Another girl interrupted, "Aisa nahi karna chahiye, warna baad mein paachhte hain." These girls are experiencing the class differentiation existing in society. This reflects their disposition towards contextual sensitivity and the maturity of judgement.

These findings are supported by Rindengan's (2023) study, which found that visual stimuli enable children to analyse patterns, interpret meaning, and generate explanations. They can even negotiate their viewpoints through discussion. Children not only visualise and describe the features but also connect the picture with existing human experiences.

Task 3: Dilemma Situation

Like the other two tasks, the dilemmas in the third task were also developed around children's lives so that they could relate and engage with those. The objective of the task was to enable children to engage in decision-making, judgment-making, and problem-solving aspects of critical thinking, and to observe the critical-thinking dispositions in process.

Dilemma 1: If you ask your mom for the cookies, she will give you two cookies. But if you take away the cookies when no one is around, and you are caught, you would be given no cookies. What would be your action?

Dilemma 2: You were playing with the ball in the house and broke your mom's favourite table decoration. Mom hears the crash and comes running to see what has happened. What would be your action?

Analysis:

A first grader makes a decision about the first dilemma on the basis of her own prior experiences in similar situations. She exclaims, "main chor thodi na hu, mummy se maang kar khaungi do (two) biscuits." Similarly, in another dilemma, she responds by supporting avoiding punishment and maintaining her image. The child, aged 6, makes judgements and decisions based on preconventional morality, concerned with what is expected of her as a good girl and what should be done to avoid punishment.

Children in grades two and three pursue creative problem-solving rather than relying on morality-based reasoning. In the second dilemma, their responses included fixing the broken item, hiding it, buying a duplicate in its place, and writing on it whatever was written on the broken one. They offered alternatives to the problem and showed a disposition towards clarification and elaboration as they provided a solution. They approached the problem by putting themselves in the situation and demonstrating perspective-taking, context sensitivity, and systematic inquiry into it. Some children held the conception that telling lies leads to god's curse, as they remarked, "agar chori karenge toh bhagwan hume shraap (curse) dete hain". To the first dilemma, about whether to take two biscuits with permission or to take as many when no one sees, a fifth grader decided, "Jab mummy do biscuit de rahi hain toh wohi kha lo pitai khaane se accha hai."

On another dilemma, about what they would do if they mistakenly broke something at home, she replied, "Mummy ko bata kr pitai kha lenge." When asked whether they would try to hide it, she gave an elaborate response that shows a disposition towards clear judgment, analyticity, and confident reasoning.

Within each dilemma, children showed dispositions towards analyticity and maturity of judgement, taking systematicity and creativity into account as they approached the dilemma and suggested an alternative.

The responses suggest that rationality at this level is largely based on moral developmental

stage, as they show evidence of either punishment avoidance, a characteristic of the preconventional stage of moral development, or the maintenance of a good boy/good girl image, a feature of the conventional stage of moral development, as given by Kohlberg (1969, 1976).

Findings

The present study made several important findings with respect to critical thinking in children:

The children exhibited more than one critical thinking disposition. While one disposition was expressed more than the others, these do not work in isolation; they are interdependent. The task analysis showed many dispositions at work in the thinking process.

The tasks were designed with their interests and grade in mind. These tasks successfully kept students engaged. It was only when they found tasks mentally challenging that they began to engage in critical thinking.

The younger children were able to describe only the surface meaning of pictures. While the relatively older ones moved on to the abstract aspects, such as truth, lies, God's curse, punishment, and social inequality. This refutes Piaget's (1952) claim that abstract thinking is possible only in the formal stage of adolescence. This study supports the view that when children are directed to think, they can look critically at their own beliefs, self-reflect, and correct them.

It was found that scaffolding plays an important role in the development of children's thinking. Children interviewed in a group seemed more confident and fluent in their verbal communication. They provided alternative ideas and showed respect for others' views. Vygotsky (1978) and Bruner (1996) advocated the importance of a collaborative learning environment for communication and higher-level thinking.

Educational Implications

Recent research (Reilly et al., 2024; Liu & Yun, 2024; Rindengan, 2023; Martinez, 2024) has acknowledged the importance of developing children's critical thinking to build higher-order skills in analysis, interpretation, decision-making, and negotiation, as well as to cultivate sensitivity and empathy. The study's findings provide evidence of critical thinking dispositions in children. It also supports storytelling as a powerful pedagogy for engaging students cognitively, socially, and emotionally. It contributes to reasoning, reflection, questioning, analysis, and judgment. Children feel secure in an environment meant for learning, reasoning, empathy, and free communication. Teachers can also use meaningful visuals to enhance critical thinking, as they remove barriers to cognitive processing, foster reflection and imagination, and make abstract thinking more accessible. Dilemma situations are useful for developing decision-making ability. The presence of critical thinking dispositions in children suggests that their development should be the primary goal, rather than treating them as a skill reserved for older learners. Their development does not require a separate subject but must be embedded in science, the arts, language, and everyday classroom experiences. Educational assessment must evaluate children's critical-thinking dispositions, as they are the foundation for the development of critical thinking.

Conclusions

This study explored the dispositions of critical thinking among young children aged 5 to 12 years through tasks. Critical thinking dispositions are the tendencies or habits of mind that enable critical engagement (Facione, 1995). Critical thinking is the primary responsibility of schools, yet teaching it alone is not sufficient to achieve the goal. Children as young as 5 years exhibit dispositions for critical thinking in and out of school contexts, at home, on the playground, and in pre-school. The responsibility of schools is to nurture critical dispositions into critical thinking abilities. The study's findings revealed that children exhibit critical-thinking dispositions such as open-mindedness, analyticity, and self-confidence, as proposed by Facione (2007). Children seemed to hypothesise, imagine, and accept their thoughts. Their thinking involved sensitivity, possibilities, and perspective-taking. These expand with age as children move into upper grades. Those children were more expressive in their language. Their experiences communicated the sociological aspects of class differentiation existing in their surroundings. In dilemma situations, they seemed to be making judgments. They reasoned for their responses. The presence of critical thinking dispositions calls for nurturing critical thinking in childhood through meaningful, child-

centred pedagogies. Such evidence makes a meaningful contribution to the existing body of knowledge and provides scientific grounds for the inculcation of inquiry-based, experiential approaches, questioning, reflective practices, and independent inquiry in school teaching and learning. Cultivating critical thinking dispositions helps children become reflective, independent, and thoughtful learners who can engage meaningfully with the world around them.

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