

Research Article

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The Decorational Paradox: How Visual Support Declines as Cognitive Demands Increase in West Bengal's Primary English Textbooks

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Abstract

Keywords

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Illustrations in English language textbooks serve both aesthetic and pedagogical functions, contributing to comprehension, engagement, and retention. This study analyzes five primary-level English textbooks prescribed by the West Bengal Board of Primary Education using Levin's (1981) typology to examine the frequency and purpose of illustrations. A total of 1,445 illustrations across textbooks of Classes I–V were analyzed and categorized into five types: decorational, representational, organizational, interpretational, and transformational. Findings of the study reveal a disproportionate emphasis on decorational images, particularly in higher classes, and a gradual decline in pedagogically purposeful visuals such as representational and organizational illustrations. The study highlights the complete absence of interpretational and transformational visuals across all textbooks. The findings have significant implications for curriculum design, advocating for a balanced visual strategy in textbook development that better supports the diverse linguistic and socio-economic backgrounds of learners in West Bengal.

Introduction

In language education, illustrations serve as cognitive scaffolds, enhancing learner engagement and comprehension while supporting vocabulary acquisition, cognitive development, and information retention. This study examines the frequency and pedagogical role of illustrations in five primary-level English textbooks in West Bengal using Levin's (1981) comprehensive typology.

In an increasingly visual world, textbook illustrations function as more than decorative elements—they are essential tools in language education. Grounded in Paivio's Dual Coding Theory (1986) and principles of visual literacy, this research explores how English textbooks designed for primary school learners in West Bengal utilize illustrations to aid comprehension, retention, and engagement. Given the socio-economic diversity and multilingual context of learners in West Bengal, particularly those in government schools where English is often a third language after Bengali and Hindi, effective visual scaffolding becomes critically important for successful language acquisition.

The significance of this study lies in its focus on a context where visual support can bridge linguistic and cultural gaps. West Bengal's primary education system serves learners from diverse backgrounds, many of whom rely heavily on visual cues to comprehend English language content. Understanding how current textbooks utilize illustrations can inform better pedagogical practices and curriculum development.

Literature Review

Research on textbook illustrations has evolved significantly over the past four decades, with scholars increasingly recognizing the pedagogical potential of visual elements. This literature review examines key studies that have employed Levin's (1981) five-category taxonomy—decorational, representational, organizational, interpretational, and transformational—to analyze textbook illustrations.

Hill (2003) conducted one of the earliest comprehensive investigations into visuals in English Language Teaching (ELT) materials. Analyzing four British coursebooks, Hill focused on color photographs and drawings, classifying them as either functional (supporting learning) or purely decorative. His seminal findings revealed that 55% of the visuals served no direct pedagogical purpose, raising critical questions about whether ELT publishers prioritize educational value or aesthetic appeal (Hill, 2003, p. 176). This study established a foundation for subsequent research examining the gap between visual potential and actual pedagogical application.

Codone (2005) extended the application of Levin's categories beyond language learning by analyzing visuals in technical communication textbooks. Contrary to expectations that most visuals would be decorative or representational, she discovered that 149 out of 280 illustrations were organizational or interpretational—categories that are more cognitively demanding and pedagogically supportive. Although working with a limited sample, Codone suggested that further research might reveal an even broader pedagogical role for illustrations in specialized texts (Codone, 2005, p. 761).

VanDeVort (2007) conducted a comprehensive doctoral study examining visuals in three widely used U.S. social studies textbook series for grades 2, 4, and 6. Her research employed a two-phase methodology: first using visual analysis and chi-square tests to conclude that iconic images—those resembling real-world objects—comprised 63% of all visuals, with non-iconic images increasing with grade level. In the second phase, she applied Levin's framework, revealing that representational visuals dominated among iconic images, while organizational types were most common among non-iconic visuals. Significantly, both types became increasingly complex with grade level, suggesting a developmental approach in textbook visual design that aligns with cognitive development theories.

Contemporary Applications in ELT

Romney (2012) closely followed Levin's model but introduced a sixth category—reiterative—which Levin had originally proposed but later absorbed into the representational category. Analyzing 1,640 images in three Japanese ELT textbooks, Romney found that 82% of illustrations fulfilled a learning-enhancing function, while only 18% were decorative. Representational visuals were most prevalent (47%), followed by organizational and interpretational visuals (6% each). Notably, no transformational visuals were identified, highlighting a persistent gap in higher-order thinking support (Romney, 2012, p. 394).

Laitinen (2014), in his master's thesis examining 1,299 illustrations across ten English textbooks, found that 49% of visuals served pedagogical functions according to Levin's framework, while 51% were decorative. Among decorative types, affective (357 images) and attentional (314 images) were dominant, used to evoke emotions or direct attention. Representational visuals again emerged as the most common among learning-enhancing types (581 images), while organizational and interpretational types were less frequent, and transformational visuals were entirely absent.

Başal et al. (2016) examined English coursebooks in Turkey and observed an unexpected increase in illustrations as grade level advanced. The highest number of visuals (301) appeared in the 8th-grade textbook, while the 6th-grade book contained the least (217). Across all grades, representational illustrations were most frequent (n=863), supporting comprehension by directly relating to text content. Decorational visuals ranked second (n=84), though this finding contrasts with studies by Hill (2003) and Romney (2012), where decorative visuals dominated. Organizational, interpretational, and transformational visuals remained minimal, possibly due to the cognitive demands they impose on younger learners.

Although Levin's typology provides a structural perspective, cognitive theories shed more light on

the ways in which visual aids facilitate learning. According to Paivio's Dual Coding Theory (1986), "when verbal associations are accompanied by nonverbal referents such as images, the likelihood of recall and comprehension is enhanced" (Paivio, 1986, p. 63). Information is processed through two systems: verbal and nonverbal. He contends that when verbal and visual channels are simultaneously activated, numerous mental representations are produced, strengthening memory pathways and promoting deeper comprehension.

Visual literacy is closely related to this; according to visual theorist Paul Messaris (1994), it is "the ability to interpret, negotiate, and make meaning from information presented in the form of an image." Instead of viewing pictures as merely decorative, students who possess visual literacy are able to get educational value from them. Felten (2008) asserts that "visual literacy empowers students to critically engage with the increasingly image-saturated world around them, fostering interpretative and expressive skills essential to education."

The educational value of well-designed textbook illustrations is highlighted by the synergy between Dual Coding Theory and visual literacy. According to Braden (1996), "pictures in educational materials are not merely supplemental; they are integral to the learning process when aligned with curricular goals." Visual scaffolding becomes even more important for fair learning experiences in multicultural and multilingual settings like West Bengal, where students frequently encounter English as a second or third language. Given that the visual mode frequently comes before verbal mastery in early education, these theoretical frameworks collectively encourage the intentional incorporation of visual features that are not just illustrative but also cognitively and linguistically beneficial.

Research Gaps and Study Rationale

These studies reveal a consistent pattern: representational visuals consistently dominate

across contexts, while transformational and interpretational types—those requiring higher-order thinking—remain significantly underrepresented. However, most prior research focuses on textbooks in international or secondary-level contexts, creating a noticeable gap in studies applying Levin's complete framework to primary-level English textbooks in regional Indian contexts.

While some Indian studies have addressed gender representation and cultural inclusivity in visuals, very few systematically assess how illustrations in state board textbooks align with pedagogical aims or cater to the diverse linguistic, socio-economic, and cultural backgrounds of learners. The current research addresses this gap by systematically examining the pedagogical function of visuals in West Bengal's primary English textbooks using Levin's comprehensive framework.

Research Questions

The following research questions guided this study:

1. What roles do visuals play, and how have material developers integrated them in the textbooks for classes I to V of the West Bengal Board of Primary Education?
2. Is there consistent frequency and equitable distribution of various types of illustrations across the selected textbooks?

Methodology

a) Research Design

This study employed a qualitative content analysis approach to examine five English textbooks approved by the West Bengal Board of Primary Education. Content analysis, which Krippendorff (2004, p. 18) defines as "a research technique for making replicable and valid inferences from texts to the contexts of their use," provided the methodological framework for evaluating the frequency and functional types of illustrations across the textbooks.

b) Theoretical Framework

Levin's (1981) five-category typology served as the analytical framework for classification:

Decorational: Images that aesthetically enhance text without supporting learning

Representational: Visuals that directly depict content described in text

Organizational: Images that provide structural frameworks for understanding

Interpretational: Visuals that clarify abstract or difficult concepts

Transformational: Images that aid memory through mnemonic techniques

c) Sample Selection

The study analyzed five English textbooks from Classes I-V prescribed by the West Bengal Board of Primary Education, representing the complete primary education cycle. These textbooks serve as the primary instructional materials for English language learning in government and government-aided schools across West Bengal.

d) Data Collection Procedures

Data collection occurred systematically from February to April 2025, involving comprehensive categorization of 1,445 illustrations. Each illustration was independently coded according to Levin's framework by the primary researcher, with a subset of 200 images (approximately 14%) coded by a second expert to ensure reliability. The inter-rater agreement reached 89%, indicating strong reliability in categorization.

e) Inclusion and Exclusion Criteria

The analysis included all visual elements directly supporting English language content. Illustrations from revision sections, non-English language pages, and purely decorative borders were

excluded. The study's scope was limited to visual content analysis, excluding examination of textual elements and their integration with visuals.

f) Analytical Approach

Following categorization, comparative analysis examined distribution patterns across grade levels, with particular attention to developmental trends in illustration types. Quantitative analysis involved frequency counts and percentage calculations, while qualitative analysis explored pedagogical implications of identified patterns.

g) Limitations of the study

Several limitations should be acknowledged. First, the analysis focused exclusively on visual content without examining text-image integration.

Second, the study did not assess actual learning outcomes or student responses to different illustration types. Third, the research was limited to textbooks from a single state board, potentially limiting generalizability to other educational contexts.

Findings and Analysis

Overall Distribution Patterns

The analysis of 1,445 illustrations across five West Bengal Board of Primary Education English textbooks reveals significant patterns in visual content distribution and function. The findings demonstrate two dominant trends that have important implications for pedagogical effectiveness.

Table 1: Overall Distribution of Illustrations Across Classes I-V

Class	Decorational	Representational	Organizational	Interpretational	Transformational	Total
I	17	437	2	0	0	456
II	10	247	6	0	0	263
III	117	168	6	0	0	291
IV	136	66	7	0	0	209
V	146	70	10	0	0	226
Total	426	988	31	0	0	1445
Percent age	29.5%	68.4%	2.1%	0%	0%	100%

Dominance of Decorational Illustrations

Decorational illustrations account for 29.5% of total visuals across all textbooks, representing a substantial portion of visual content that serves limited instructional purposes. According to Levin's (1981) typology, these images contribute minimally to learners' cognitive or linguistic development, functioning primarily to enhance aesthetic appeal rather than support learning objectives.

The distribution of decorational images shows a concerning inverse relationship with grade level: Class I contains only 17 decorational images (3.7% of class total), while Class V contains 146

such images (64.6% of class total). This pattern suggests that as students advance and encounter more complex linguistic content, they receive proportionally less pedagogical visual support and more ornamental imagery.

Prevalence and Decline of Representational Visuals

Representational illustrations emerge as the most frequently used pedagogical category, comprising 68.4% of all visuals. These images play a crucial role in helping students form mental connections between textual content and visual representations, supporting comprehension through direct depiction of concepts, actions, or scenes.

However, the data reveal a dramatic decline in representational visuals from lower to upper primary levels: Class I contains 437 representational images (95.8% of class visuals), while Class V includes only 70 such images (31.0% of class visuals). This downward trend is particularly concerning given that upper primary textbooks often contain more complex language structures and abstract concepts that would benefit significantly from consistent visual reinforcement.

Minimal Presence of Organizational Illustrations

Organizational illustrations, which include tables, charts, flow diagrams, and other structural visual aids, represent only 2.1% of total visuals. Despite their recognized importance in facilitating systematic information arrangement and comparison—skills crucial for developing analytical thinking—these visuals remain severely underutilized across all grade levels.

While there is a modest upward trend from Class I (2 images) to Class V (10 images), the overall presence remains insufficient to support the development of organizational and analytical skills that become increasingly important as learners progress through their educational journey.

Complete Absence of Higher-Order Visual Support

The most striking finding is the complete absence of interpretational and transformational

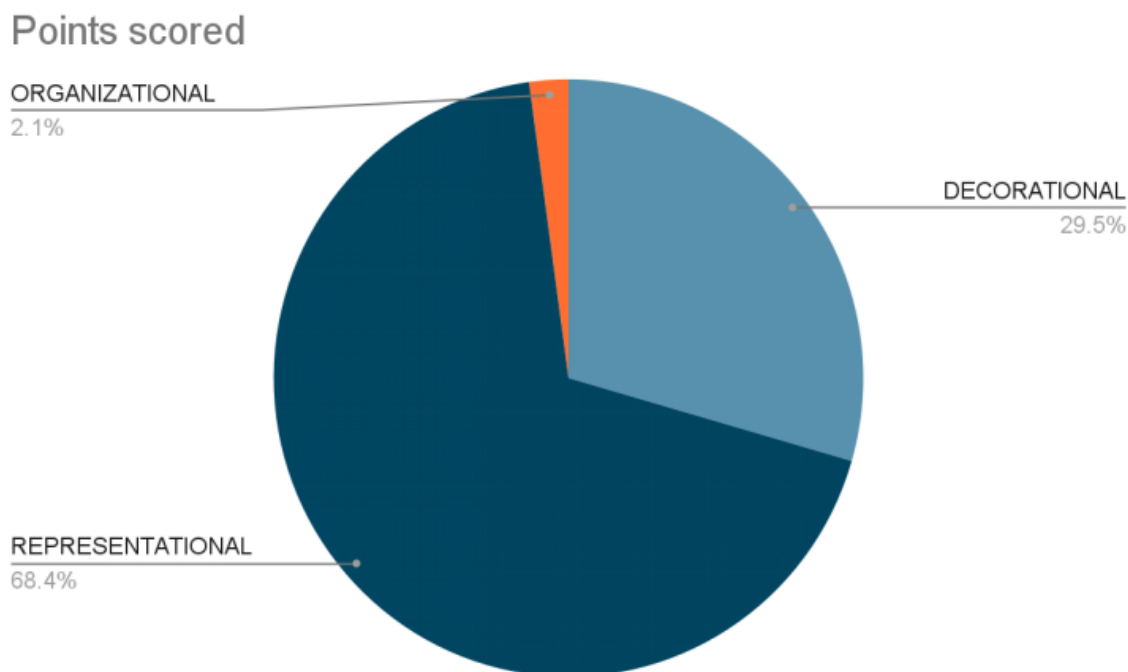
illustrations across all five textbooks. This represents a significant gap in cognitive scaffolding:

Interpretational visuals (such as graphs, conceptual diagrams, or abstract representations) are essential for explaining complex relationships, cause-and-effect connections, and underlying themes. Their absence limits students' ability to understand abstract concepts and develop critical thinking skills.

Transformational illustrations serve as powerful memory enhancement tools and support abstract reasoning through mnemonic devices and creative visual representations. As Levin (1981) notes, such illustrations are instrumental in promoting higher-order thinking and long-term retention—components entirely missing from the current textbook design.

Grade-Level Analysis and Developmental Concerns

The data reveal a troubling inversion of pedagogical principles: as students mature and develop greater cognitive capacity, they receive less sophisticated visual support. This pattern contradicts established cognitive development theories, which advocate for progressively complex and strategic visuals to match learners' growing analytical capabilities. Findings of the study are represented in the pie chart and are discussed in detail.



Early Primary (Classes I-II): It is found that there is a high concentration of representational visuals (95.8% and 93.9%, respectively) that provides strong foundational support for basic concept formation and vocabulary development.

Mid-Primary (Class III): Interestingly, a marked transition point can be noted where decorative images increase dramatically to 40.2%, while representational visuals drop to 57.7%, suggesting a shift in design philosophy.

Upper Primary (Classes IV-V): It is interesting to find dominance of decorative visuals (65.1% and 64.6%, respectively) with minimal pedagogical support, creating a mismatch between student needs and visual resources.

Implications for Multilingual Learners

These patterns have particular significance for West Bengal's multilingual learning environment. Students who rely on visual cues to bridge linguistic gaps between Bengali, Hindi, and English find themselves with decreasing visual support precisely when English content becomes more challenging. The absence of interpretational and transformational visuals further limits

opportunities for students to develop sophisticated understanding of English language concepts through alternative cognitive pathways.

Discussion

i) Pedagogical Implications of Current Visual Strategies

The findings reveal fundamental misalignments between visual design practices and established principles of cognitive development and second language acquisition. The predominant reliance on decorative images in upper primary grades contradicts research demonstrating that older learners benefit from more sophisticated visual scaffolding to support abstract thinking and complex concept formation.

ii) The Decorational Paradox

The increased emphasis on decorative illustrations in higher grades represents what might be termed a "decorational paradox"—as cognitive demands increase, pedagogical visual support decreases. This pattern may reflect several underlying assumptions: that older students require less visual support, that

decorational images maintain engagement, or that aesthetic appeal compensates for reduced pedagogical functionality. However, research in second language acquisition suggests that visual scaffolding becomes more, not less, important as linguistic complexity increases (Paivio, 1986; Braden, 1996).

For multilingual learners in West Bengal, this paradox creates particular challenges. Students who have relied on visual cues to comprehend English content in early grades encounter progressively complex linguistic structures with diminishing visual support. This transition may contribute to the documented decline in English proficiency observed in many regional studies of primary education outcomes. Hill (2003) similarly found that more than half of textbook visuals in ELT materials were decorative rather than functional, raising concerns about missed learning opportunities. VanDeVort (2007) noted that while representational visuals remained dominant, the pedagogical potential of organizational and transformational visuals was underutilized even in higher grades.

The complete absence of interpretational and transformational visuals represents significant missed opportunities for cognitive development. These illustration types support higher-order thinking skills, such as abstract reasoning and inferencing, that are essential for academic success beyond primary education. Codone (2005) highlighted that visuals categorized as organizational and interpretational were far more cognitively demanding and effective in specialized content learning—underscoring the benefits of such visuals for developing deeper understanding.

Interpretational visuals could help students understand abstract grammatical concepts, cultural contexts, and thematic connections across texts. Their absence limits students' ability to develop critical thinking skills and deeper comprehension strategies. Further, transformational illustrations could provide mnemonic support for vocabulary retention, grammar acquisition, and sequencing. Dual

Coding Theory also demonstrates that visuals significantly enhance memory and structure learning across contexts (Paivio, 1986; Felten, 2008).

Socio-Economic and Cultural Considerations

The current visual strategy may inadvertently disadvantage students from diverse socio-economic backgrounds. Learners with limited exposure to English outside school environments rely heavily on textbook visuals for cultural context and conceptual understanding. The predominance of decorative over pedagogical images may limit these students' ability to develop a comprehensive understanding of English language content. Furthermore, the absence of organizational visuals may particularly impact students who would benefit from structured approaches to learning, including those who excel through systematic and analytical thinking styles.

Conclusion

This comprehensive analysis of 1,445 illustrations across West Bengal's primary English textbooks reveals significant misalignments between visual design practices and pedagogical principles. The findings demonstrate a troubling inverse relationship between grade level and pedagogically useful visuals, with decorative images increasingly dominating upper primary textbooks precisely when students require more sophisticated cognitive support.

These findings have immediate implications for curriculum development, teacher training, and educational policy in West Bengal. The current visual strategy may inadvertently limit students' cognitive development, particularly for multilingual learners who rely on visual scaffolding to bridge linguistic and cultural gaps. The study advocates for a fundamental restructuring of visual strategies in primary English textbooks, emphasizing balanced distribution of illustration types across all grade levels; progressive introduction of higher-order visual supports; integration of organizational and

interpretational visuals to support analytical thinking; implementation of transformational visuals for enhanced retention and transfer.

Several areas warrant further investigation to strengthen the evidence base and implementation of these visual support strategies. A comparative analysis across different state education boards would provide valuable insights into how regional variations in curriculum design and cultural contexts affect visual learning effectiveness. Longitudinal studies examining the impact of illustration types on learning outcomes are essential for establishing clear causal relationships between specific visual approaches and student achievement over time. Investigation of student and teacher perceptions of visual effectiveness would offer crucial stakeholder perspectives on the practical implementation and reception of different visual strategies in real classroom environments. Finally, the development and testing of enhanced visual strategies in classroom settings would provide empirical validation of proposed approaches while identifying practical challenges and refinements needed for successful implementation across diverse educational contexts.

Final Considerations

This research contributes to the growing body of literature on visual literacy in educational contexts while addressing a significant gap in understanding regional textbook design practices. The findings suggest that thoughtful integration of Levin's complete typology could significantly enhance the pedagogical effectiveness of English language textbooks, ultimately supporting better learning outcomes for India's diverse student population.

The implications extend beyond West Bengal to other regional contexts where multilingual learners encounter English as an additional language. By recognizing illustrations as essential pedagogical tools rather than decorative elements, curriculum developers can create more effective and inclusive educational materials that support all learners in achieving English language proficiency.

Suggestions / Recommendations

Recommendations

Based on these findings, several recommendations emerge for improving visual strategies in West Bengal's primary English textbooks:

i) Visual Support Strategy for Primary Education

The immediate priorities for reforming visual content in primary education focus on creating a more balanced and educationally effective approach to imagery. Currently, decorative images comprise 65% of visuals in upper primary grades, which needs to be dramatically reduced to approximately 20-30% to make room for more meaningful visual content. This reduction should be accompanied by increasing representational visuals in Classes IV-V to maintain at least 50% of total visuals, ensuring students continue to receive concrete visual support for learning concepts. Additionally, organizational visuals should be introduced to comprise 15-20% of total images across all grades, helping students develop structural understanding and visual literacy skills.

The introduction of higher-order visual support represents a significant advancement in educational methodology, moving beyond simple illustration to more sophisticated learning tools. Interpretational visuals should be developed to include concept maps for grammar structures, visual representations of cultural contexts, and diagrams showing cause-and-effect relationships in narratives. These tools help students make connections between abstract concepts and concrete understanding. Transformational visuals take this approach further by implementing mnemonic imagery for vocabulary retention, creating visual mnemonics for grammar rules, and developing story-based visual sequences for complex concepts. These transformational elements serve as powerful memory aids that help students internalize and recall information more effectively.

The developmental appropriateness of this visual strategy ensures that the complexity of visual support matches students' cognitive development stages. The approach maintains high representational support in early grades while gradually introducing organizational elements, recognizing that younger students need more concrete visual anchors. Interpretational visuals are systematically introduced from Class III onward, when students begin developing more sophisticated analytical thinking skills. Finally, transformational visuals are implemented progressively from Class IV to support memory consolidation, aligning with students' growing capacity for abstract thinking and complex cognitive processing. This graduated approach ensures that visual support evolves with students' developmental needs while maintaining

educational effectiveness throughout their learning journey.

ii) Implications for Teacher Training and Implementation

These recommendations require corresponding adjustments in teacher training programs. Educators need professional development in visual literacy principles, understanding how different illustration types support learning objectives, and strategies for maximizing the pedagogical potential of textbook visuals.

Teachers should also be equipped with techniques for supplementing existing textbooks with additional visual supports, particularly organizational and interpretational visuals that can be created or sourced to address current gaps.

Appendix:

Examples of Illustrations and Their Functions

Figure 1: Decorational Illustration



Source: Butterfly Class IV, p. 21

This illustration demonstrates a decorational function, providing aesthetic enhancement without direct pedagogical support for text comprehension or learning objectives.

Figure 2: Representational Illustration



Source: Amar Bai Class II, p. 54

This image exemplifies a representational function by directly depicting content described in the accompanying text, supporting student comprehension through visual-textual correspondence.

Figure 3: Organizational Illustration

ACTIVITY 7(a)

Underline the adverbs in the following sentences. Group them under 'Adverb of manner', 'Adverb of time' and 'Adverb of place':

- (1) Now I will go to school.
- (2) He sat beside me.
- (3) He will watch a play tomorrow.
- (4) She eagerly waited for the result.
- (5) The train moved slowly out of the station.
- (6) We won the match yesterday.
- (7) Come here.
- (8) I shall gladly do it.

ACTIVITY 7(b)

Let's classify the adverbs in the following chart:

Adverb of Time	Adverb of Manner	Adverb of Place

81

Source: Butterfly Class V, p. 81

This illustration demonstrates organizational function by providing a structural framework for understanding information relationships and supporting systematic learning approaches.

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