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Developing a Framework for Visual Narratives in Children's Learning

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ABSTRACT

Visual narratives play a crucial role in child development, shaping how they perceive stories, emotions, and relationships. This study draws inspiration from Cohn's Visual Narrative Reader (2016) to design and implement a structured framework for creating effective visual narratives tailored specifically for children. The proposed framework incorporates key elements such as character design, story flow, colour psychology, and age-based adaptation, ensuring that each component aligns with children's developmental needs. To validate this framework, an experimental study was conducted with children of age group 10-12 years to assess COMPREHENSION, ENGAGEMENT, AND EMOTIONAL RESPONSE to Visual narratives developed under this model. The Visual Narratives are Illustrated by myself (illustrator-Shruti Soharia Singh). The findings highlight the importance of cohesive narrative structure, relatable characters, and colour choice in enhancing children's understanding and emotional connection to visual stories. This paper contributes to the field of visual storytelling by providing a robust, child-centred narrative framework with practical implications for educators, designers, and researchers interested in leveraging visual narratives as a tool for learning and engagement in early childhood development. **60 students** of age **10-12 years** are evaluated, through a Questionnaire. The visual narrative **Version A and B** were created, with difference in the three Elements of Design**: Line, Colour and Space**. Observation of the changes among these three variables affect the **Engagement, Comprehension and Emotional Response**. The impact and efficacy of the VN leading to **Curiosity**. A key aspect or Conjunction between the known and to be known. Knowledge to be attained.

Keywords: Visual Narratives, Elaborate, Engagement, Comprehension, Emotional Response, Curiosity, Learning.

Introduction

Storytelling, narrative, and visual narrative are three important terms when we talk about how people, especially children, learn. Storytelling has always played a big role in how children learn. In ancient times, knowledge was shared through spoken words. These spoken messages were often told as stories, which helped make the lessons easier to remember and understand.

To make storytelling more effective, people began to add pictures to spoken or written words. These pictures helped give form and clarity to the stories, making it easier for listeners or readers to understand what was being told. Even before writing systems existed, people used cave paintings to express what they experienced or wanted to share. These images told stories using only visuals — showing characters, actions, and settings to communicate meaning. This form of storytelling is what we now call a visual narrative (Poovaiya). One of the oldest examples of storytelling comes from the Mesopotamian civilization. The *Epic of Gilgamesh*, the world's oldest known story, was carved into stone using early writing. Before writing was invented, people painted pictures on walls or objects to tell their stories. Once writing was developed, storytelling could include spoken words, visuals, and writing — separately or all together.

Storytelling generally includes how the story is told, what media (spoken, written, or visual) are used, and how events are presented. A narrative — whether spoken or visual — usually includes elements such as characters, a plot, setting, theme, time, and space. When images are used to tell a story, we call it a *visual narrative*. This kind of storytelling gives readers or learners a strong way to understand and connect with ideas.

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Visual storytelling is especially important in early childhood. Young children learn well through pictures and stories with characters and plots. Visual cues help children make sense of what's happening, and this makes visual narratives useful both in schools and for fun. These narratives can express complex ideas and feelings in ways that match children's thinking and emotional development. Even though people create and view images every day (Kress & van Leeuwen, 2006), they may not always stop to think about what these images mean or how they are made (Avgerinou, 2009). To truly understand visual communication, one must take time to observe and think carefully (Berger, 1973). As Berger (1973) says, "Our perception is influenced by our knowledge and beliefs" (p. 8). This means that what we already know shapes how we see things.

In literature, scholars use many ways to understand texts — like feminism, Marxism, history, biography, or cultural studies. Some of these ways can also be used to understand images (George, 2002). However, traditional literary theory doesn't often explore the art and design of visual works in depth. That's why it's important to have the right words and tools to talk about visual features and how they relate to each other (Emanuel & Challons-Lipton, 2013). Kress and van Leeuwen (2006), in their book *Reading Images: The Grammar of Visual Design*, say that we urgently need better ways to talk about visuals (p. 34). Emanuel and Challons-Lipton (2013) also argue that most college programs do not do enough to teach students how to understand and talk about visual content.

The Role of Art Style in Visual Narratives

In a Visual Narratives course taught in spring 2017 at a U.S. (Williams, 2019) university, researchers studied 124 course documents using content analysis (Bazerman & Prior, 2004). The study showed that students used many different art and design elements in their analysis papers and creative projects. By working with these elements, students built a flexible set of skills (New London Group, 1996) that helped them read and create visual texts better improving their visual literacy lack of design of framework involving age-appropriate design elements such as character simplicity, color psychology, and sequence flow. (Williams, 2019)

Table 1: Art and Design elements in course reading (Williams, 2019)

Author	Course reading	Art and design elements
Serafini (2014)	*Reading the Visual* (Chapter 5)	dot, line, shape, colour, size, scale, position, orientation, typography, borders, motifs, symbols, gaze, point of view, modality, salience, etc.
Hintz and Tribunella (2013)	*Reading Children's Literature* (Chapter 5)	relation of words/images, book size, picture size, composition, colour, line, medium, setting, text within pictures, etc.
Eisner (2008)	*Graphic Storytelling and Visual Narrative*	stereotypes, animal characteristics, symbols, apparel, out-of-place objects, surprise, dialogue, rhythm, etc.
Golden (2001)	*Reading in the Dark* (Appendix 1)	framing/shots, camera angles, camera movement, editing techniques, mise-en-scène, etc.
Block (2008)	*The Visual Story*	contrast, affinity, space, line, shape, tone, colour, movement, rhythm, etc.

Study Aim and Overview:

This research focuses on developing a child-friendly framework for creating visual narratives, inspired by Neil Cohn's *Visual Narrative Reader* (2016). The goal is to design visual stories that better connect with children by using elements suitable for their age, such as simple characters, carefully chosen colors, and smooth story flow. An experimental study involving children from various age groups will test how well this framework works. The study hopes to understand how these visual narratives can help children engage emotionally, follow the story more easily, and improve their comprehension.

Theoretical background

Studies show that visual narratives play an important role in supporting children's cognitive development. They help improve memory, empathy, and language skills, especially when the visuals include clear character expressions, strong colors, and a logical story sequence. Understanding visual stories also involves other cognitive skills like understanding time, events, and other people's perspectives—known as Theory of Mind (Baron-Cohen et al., 1986; Sivaratnam et al., 2012) (Neil Cohn, 2019)Visual narratives are also used in research to study how children reason in sequences (Zampini et al., 2017), think about time (Weist, 2009), and solve problems (Kaufman & Lichtenberger, 2006).

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Even though the ability to follow visual stories generally develops around ages 4 to 6, these skills depend on other mental abilities that develop around the same time. Because of this, using visual narratives with very young children can be challenging due to overlapping developmental factors. The study of visual narratives spans many areas, including psycholinguistics, cognitive science, and developmental psychology. This broad interest makes sense, since humans have used images to communicate ideas for thousands of years—from prehistoric cave drawings to modern comics. However, a fully unified research area dedicated to how we understand visual narratives is still growing (Cohn, 2019).

Cohn's Visual Narrative Grammar (VNG)

Cohn (2016) describes visual narratives as a kind of "visual language," similar to spoken or written language. His Visual Narrative Grammar (VNG) shows that images in a sequence work like words in a sentence—they follow a structure that helps us understand the story. Different panels in a comic, for example, serve different roles in telling the story, such as introducing the scene, building tension, or showing a resolution (Cohn, 2013b). This system is similar to older models used in storytelling and film (e.g., Mandler & Johnson, 1977; Carroll, 1980), but VNG uses simpler, more flexible structures influenced by modern linguistic theories (Jackendoff, 2002; Culicover & Jackendoff, 2005).

VNG also separates visual structure from meaning. Studies show that the brain reacts differently when visual structure is broken, just like it does when grammar or word meaning is disrupted in sentences (Cohn et al., 2012, 2014; Cohn & Kutas, 2015). This supports the idea that we mentally organize visual stories into segments and that our understanding shifts when the coherence between events changes (Gernsbacher, 1990; Zacks & Magliano, 2011). People update their mental models as they follow a story, and large changes in the visuals—like time shifts or new settings—often trigger these mental updates (Huff et al., 2014).

Metaphor, Blending, and Image Schemas

Conceptual metaphors help us understand one thing using ideas from another. For example, we understand TIME as SPACE ("The weekend is approaching"), or IDEAS as BUILDINGS ("The foundation of the theory is weak"). These metaphors shape how we think (Lakoff & Johnson, 1980). Related to this is Blending Theory, which explains how we combine different concepts to imagine new ones, such as science fiction aliens that mix human and non-human traits. Blending can involve more than two inputs and can even explain ideas that are not metaphors. Image schemas are mental structures shaped by our bodily experiences—like moving through space or handling objects. These schemas form before we can speak and influence how we understand visuals (Forceville, 2016; Hampe, 2005). For example, they help us understand comics, cartoons, and other types of visual media by linking familiar patterns across different experiences.

Types of Learning in Children

Children's learning can be categorized into three main types: sensorimotor (movement and senses), cognitive (thinking and reasoning), and linguistic (language development). These different areas influence how children interact with and understand visual narratives.

Design Frameworks for Children's Media

Designing media for children requires careful attention to their age and developmental stage. Younger children do better with simple images and fewer colors, while older children can handle more detailed visuals and symbolic meanings. Studies show that as children grow and their IQ levels shift, their understanding of visual narratives also changes (Crawshaw, 2020). Research also examines how well children remember and understand stories presented through different media, such as books, films, and apps.

Willats (1990) noted that narratives should answer questions like Who, What, Where, When, Why, and How. Lines in drawings represent more than just outlines—they can show texture, cracks, or object boundaries (Cutting & Massironi, 1998). Unlike natural scenes, which don't have black outlines, drawings and comics simplify reality through visual conventions.

Understanding Artistic Style in Visual Narratives

Every drawing has a visual style that shapes how viewers see reality. This "visual ontology," or view of the world, makes people accept the represented scene as a believable version of reality (Rawson, 1987; Arnheim, 1971). Once people get into the story, the drawing style often fades into the background and becomes "neutral" (Busselle & Bilandzic, 2008).

Comics mostly use line drawings, even though real life doesn't have black outlines. This style has become dominant

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over time. Interestingly, people tend to prefer the first version of something they see (Lefèvre, 2007). For example, readers familiar with modern *Tintin* comics may be surprised by the original 1930s versions, which had different layouts and styles.

Comparing Two Visual Narrative Styles

To understand how different art styles affect story comprehension, emotional engagement, and viewer connection, two versions of a visual story were created. Both were based on a story by Shweta Ganesh Kumar. One version, illustrated by Shruti Soharia Singh and published by Katha, had its own visual style. In the second version, the same story was re-illustrated with changes in character design and color composition. By comparing how children respond to both, we can assess how visual style influences understanding and engagement with the story.

Methodology

The methodology for this study is designed to assess the effectiveness of a visual narrative framework inspired by *Cohn's Visual Narrative Reader* (2016) in enhancing **children's comprehension, engagement, and emotional response.** This section outlines the steps involved in developing, implementing, and evaluating the proposed framework through a structured experimental study.

1. Participants

1. **Sample Size**: Recruit approximately 60 children, evenly divided into three age groups (10-12 years) to account for variations in cognitive and emotional development, their understanding.
2. **Inclusion Criteria**: Children with no reported cognitive or developmental impairments. Belonging to public school, depicting the average north Indian school student of this age.
3. **Parental/Teacher Consent**: Obtain informed consent from parents or guardians, seeking permission from school Principal and teacher, explaining the study's objectives, methods, and potential risks or benefits.

2. Development of the Visual Narrative Prototype

Framework Application: Create visual narratives using the proposed framework, emphasizing key elements such as:

i. *Character Design*: Characters should be simple, expressive, and relatable, with visual cues that clearly convey emotions (e.g., happy, sad, surprised).
ii. *Story Flow and Sequencing*: Stories are arranged in a logical, linear sequence to help children easily follow the plot and understand cause-and-effect relationships. For older children, some scenes include simple symbolic representations to encourage interpretive thinking.
iii. *Color Psychology*: Full colour illustrations in Version A and Black and White with one colour green chosen, reason being the story is from Kerala, rainy season. Hence, green is going to be the most prevalent colour to depict flora fauna and the essence of the landscape. Colors are adapted to be developmentally appropriate, with younger children experiencing more vibrant colors and older children exposed to a wider color palette.
iv. *Symbolism and Metaphor*: Include simple symbolic elements suitable for each age group (e.g., rain to signify happiness, frock which denotes being special, biscuits denoting happiness), increasing complexity with age and expression.

Two Visual Narrative Versions: Create two versions of the same story, written matter is the same. Yet they are rendered in two distinct ways. One with full colours and the other one one in one colour. The responses are collected to identify which Visual Narrative expresses the story better. Efficacy and impact of the changes made to the three elements of Design namely LINE, COLOUR and SPACE. The variations in character design, color scheme, execution style, details & intricacy of illustration. The sequence flow remaining same to compare the impact of these elements. Here we have tried to compare the understanding comprehension through 3 key attributes. Although there are various parameters to identify, evaluate the comprehension, understanding and eventually learning among children through Visual Narratives which are explained above in the literature review. Here, considering ENGAGEMENT, COMPREHENSION & EMOTIONAL RESPONSE as the parameters to evaluate learning among children.

3. Assessment

i. **Group Assignment**: 60 students in batches were shown the Version A and Version B. They were made to answer the Questionnaire. The questionnaire is closed ended. They were made to put their preferences at the end for clarity of their choice of Visual Narrative Version they were interacting. The story was narrated by same person, myself. No

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probing done while the questions were answered by the students. Students were asked to specify at various Questions which narrative expressed better. This helped in clearly identifying the choice and style of VN.

ii. **Controlled Environment**: Conduct the study in a quiet, familiar setting, the school's Lab ensuring children feel comfortable and minimizing distractions. They knew the place.

iii. **Exposure and Engagement**: Allow each child to view the visual narrative in a group, ensuring they have enough time to observe and understand each scene. 10 mins to introduce the class to the task they are entering into. To make them familiarize them with moderator, task, story and later they would be filling a questionnaire. 20mins approximately to read the story and 15mins to fill the questionnaire and collecting their sheets.

4. Data Collection Instruments

i. Researchers observe and record **the responses from students on the questionnaire**

ii. Post-Viewing : Questionnaire to be filled by each student.

iii. Explain the questions well to students. For better understanding of Question to receive appropriate answers. (Questionnaire attached as Appendix A) (Response from students attached as Appendix B)

5. Quantitative and Qualitative Data Analysis

Qualitative Analysis:

i. Analyze comprehension scores across age groups and narrative versions to identify patterns or significant differences.

ii. Analyse the linguistic skills. The words, narration, storyline, flow, understanding of the visuals, translation of visuals to words.

iii. Analyse the Emotional Response. Based on their reactions to the Visual Narrative.

iv. Review open-ended feedback from parents and researchers to gain deeper insights into children's experience of the narratives.

v. **Statistical Testing**: Data collected after qualitative analysis based on the parameters set by experts. The values collected were then statistically analysed using methods (e.g., ANOVA or t-tests) to evaluate the effectiveness of different framework elements (e.g., impact of text, color or character design on comprehension) and compare results across age groups.

6. Ethical Considerations

i. Ensure all procedures align with ethical guidelines for research involving children.

ii. Prioritize children's comfort, ensuring they can withdraw at any time without consequences.

iii. Store all data securely, protecting the confidentiality of participants.

7. Limitations

i. Recognize potential limitations, such as sample size constraints, cultural variability, and the subjectivity of emotional response measures.

ii. Outline steps to address these limitations in future studies, such as expanding the sample or conducting cross-cultural research.

iii. This detailed methodology offers a comprehensive approach for testing and evaluating the framework's effectiveness in creating engaging and educational visual narratives for children. Outline of the types of data tables and calculations you can include to analyze the effectiveness of the visual narrative framework for children, organized into key areas of assessment: **Comprehension**, **Emotional Response** and linguistic skills.

Data Analysis and Conclusion

The students have a very clear answer to their choice of Visual Narrative. They found the coloured version to be appropriate. 50 students liked the coloured Version A. 10 liked the Version B with single colour. 6 liked the first part engaging, 37 students find the middle part engaging, 16 liked the last part engaging. All found main character Leela as the main character. 50 students ound the coloured artworks more understandable, well depicted looking like Kerala more than the Version B. 34 students learnt more than 3 Malayalam words, 9 learnt three Malayalam words, 13 learnt two Malayalam words, 3 learnt one word Malayalam word. The main character feels happy all have the same opinion but they have different reasons. According to 39 students Pink frock makes her happy, 5 find biscuits, 7 find rain and 2 find toys to be the reason to make Leela happy. The essence of the place, the characters, the setting, the theme, instances, events all are well conveyed in this Version A, with full colour. Version B, had one colour. It lacked in all those aspects. Also, the text could be well translated in the Version A, 'pink and yellow flowers upside down on the water', 'Pink dress', 'Appoopan's mundu was soggy chocolate brown' all this can be well portrayed in coloured version

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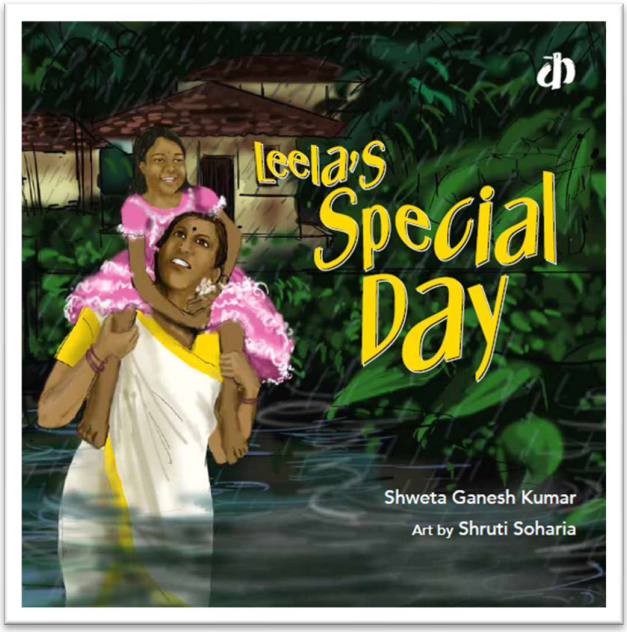
not in single colour. The narrative was multi modal. Inferences were made to denote the place where Achan worked. Through Moideen Ikka's reference. The sudden sounds of helicopter, children screaming at the same time referring to Moideen Ikka bringing large sheets for each child to create paper boats. Distinct information happening in the same scene, written in the same paragraph. Yet been read and viewed by students at the same time. Registration of these events can be different, engagement with them was pertinent.

Ethnography has an important role, in two ways. One, from the point of view of the respondents who belonged to Gurgaon, Delhi NCR and second the story was about Kerala and terms of the language Malayalam. The students found novelty. The aspects of familiarity, about the city Kerala, induced interest to know more and the aspect of the unknown in terms of language added curiosity to know more, hence read further and kept them engaged. Students were unaware of the name of the river Chalakudy, Malayalam terms.

The students like the open-ended narratives to which the end is not one, it can change. It can be any. It can be imagined by each one in a different manner. The results support the proposed framework's effectiveness in enhancing engagement, comprehension, and emotional connection in children, particularly for younger age groups. **Version A**, with elaborate visuals and vibrant colors, was more effective for younger children, affirming the role of detailed drawings showing essence of the place **children** were less influenced by visual style, suggesting a greater capacity to interpret more complex visual narratives. These findings highlight the importance of tailoring visual narrative elements like color, character design, and story structure to children's developmental stages. The framework serves as a guideline for educators and designers aiming to create age-appropriate visual narratives that foster learning and emotional engagement in children. Future research could expand this framework across different cultural and digital contexts to explore its broader applicability.

Version A



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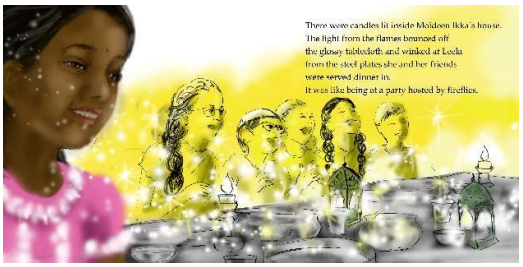

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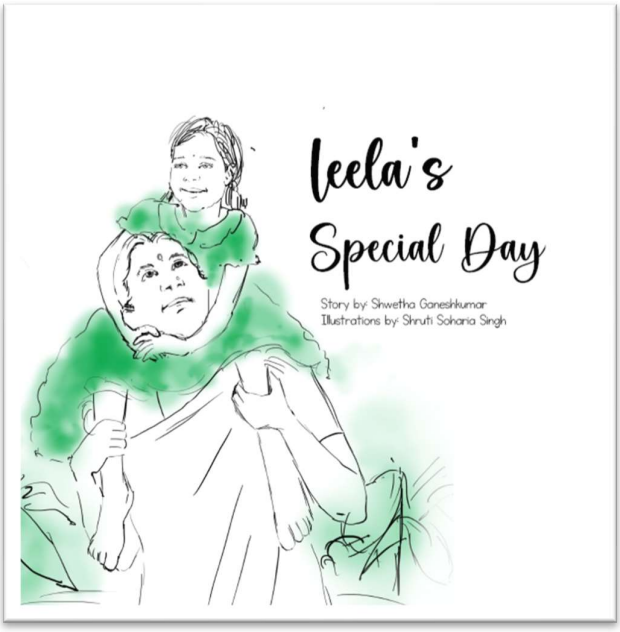
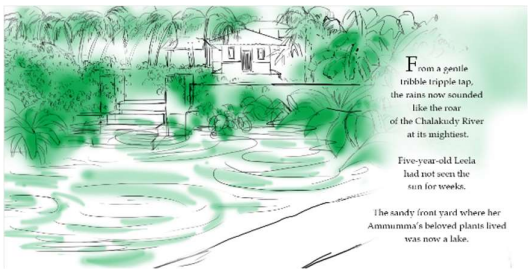
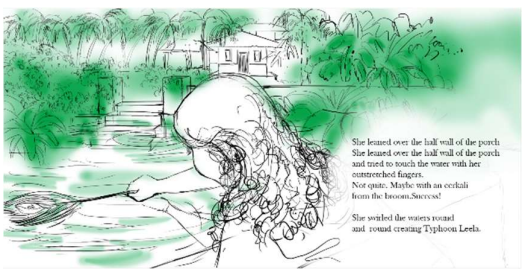
Version B







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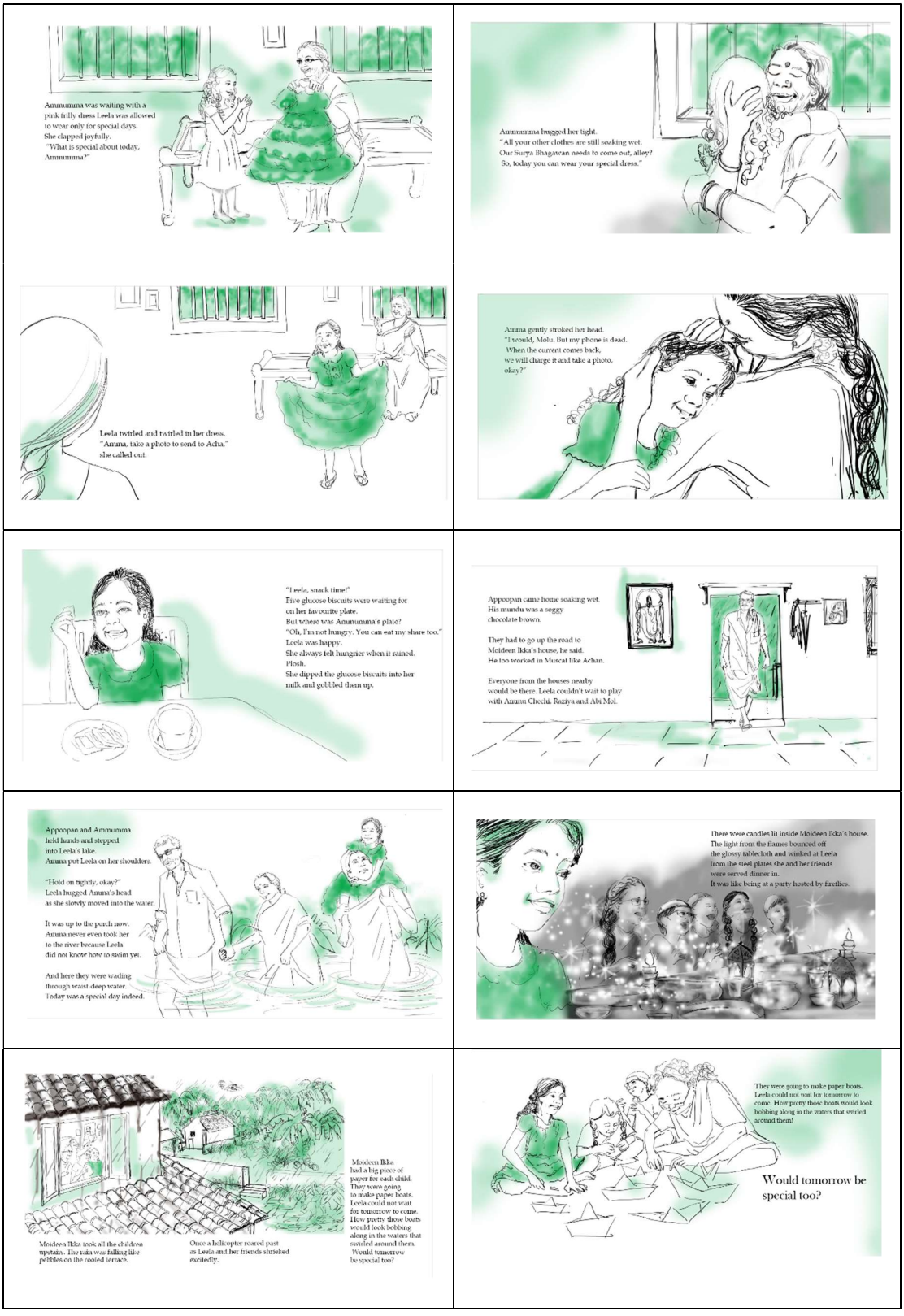

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