

Text-Image Relations and Page Layout in Illustrated Page Designs for a Digital Storybook for Early Childhood

A Case Study of Mangrove Munchkin and The Rooted Forest

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BACKGROUND

WHY TEXT-IMAGE DESIGN MATTERS

1.

Picturebooks build meaning jointly — through verbal text AND visual illustration together, not either mode alone

2.

Digital storybooks show strong pedagogical promise for environmental education — improving learning outcomes and pro-environmental attitudes in young children.

3.

Yet the visual design itself is rarely studied empirically — especially in the Indonesian context, and separately from learning-outcome measures.

RESEARCH QUESTIONS

TWO QUESTIONS ABOUT PAGE DESIGN

1.

What types of text-image relations characterize the book's 40 pages?

Following Nikolajeva & Scott's five-category typology.

2.

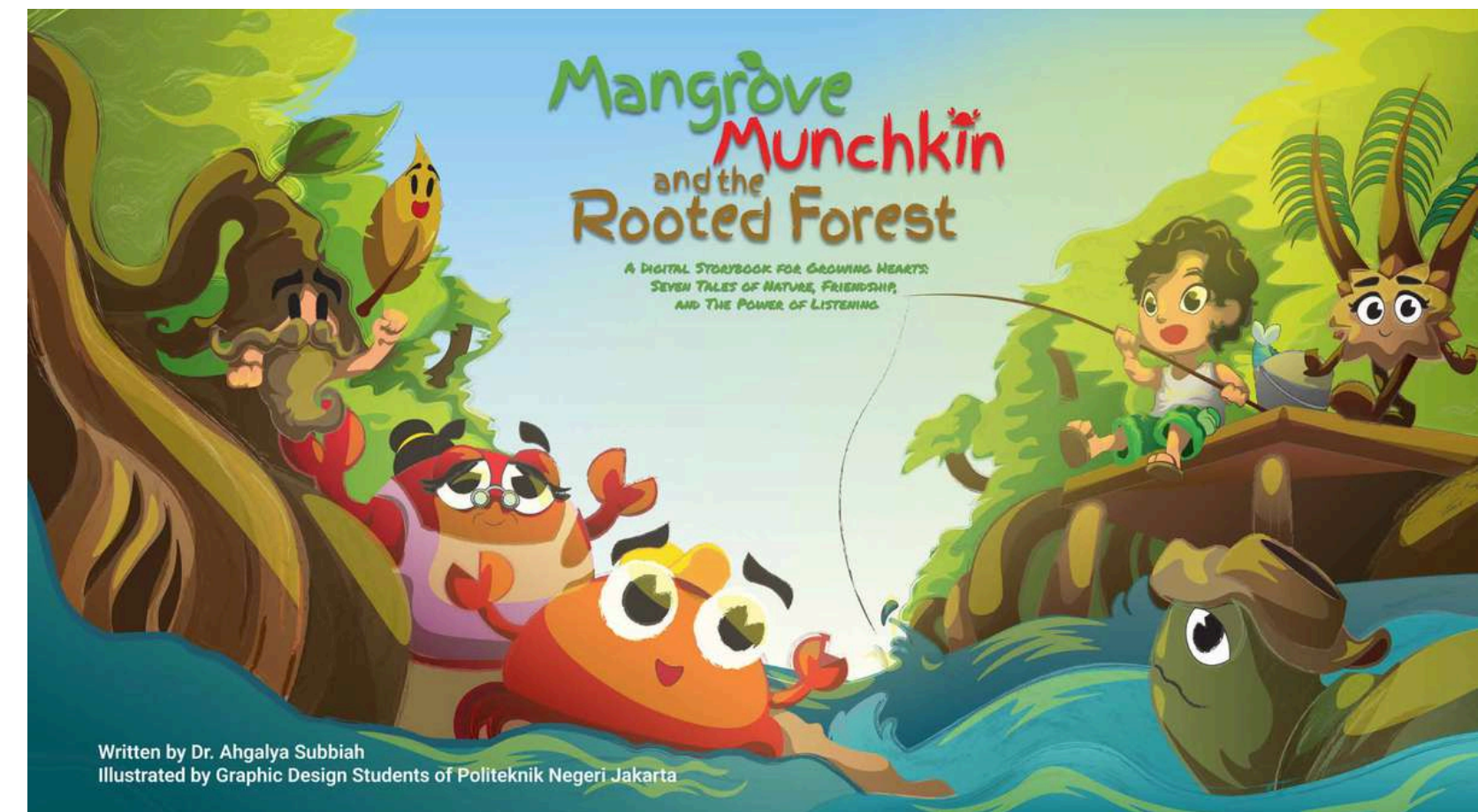
How is the page organized spatially — diagramming, framing, and text placement?

Following Van der Linden's page-diagramming and framing categories.

OBJECT OF STUDY

Mangrove Munchkin and The Rooted Forest

1. **7 chapters, 40 pages.** Chapter lengths ranging from 5–6 pages each.
2. **Produced in Adobe Illustrator.** Static, high-fidelity vector page designs.
3. **Interactivity planned, not yet built.** Navigation, animation, and touch/gesture features are designed but not yet implemented.



We analyze the illustrative and compositional foundation — not interactive behavior.

RESEARCH METHOD

A Qualitative Case Study Design Through Coding Procedure & Triangulation

4 Coding Clusters (40 pages each)

- Text-image relations
- Diagramming layout
- Framing & field
- Text placement

1

Single-coder, documented audit

Iterative self-audit against operational definitions — not independent inter-rater coding. Treated explicitly as a limitation.

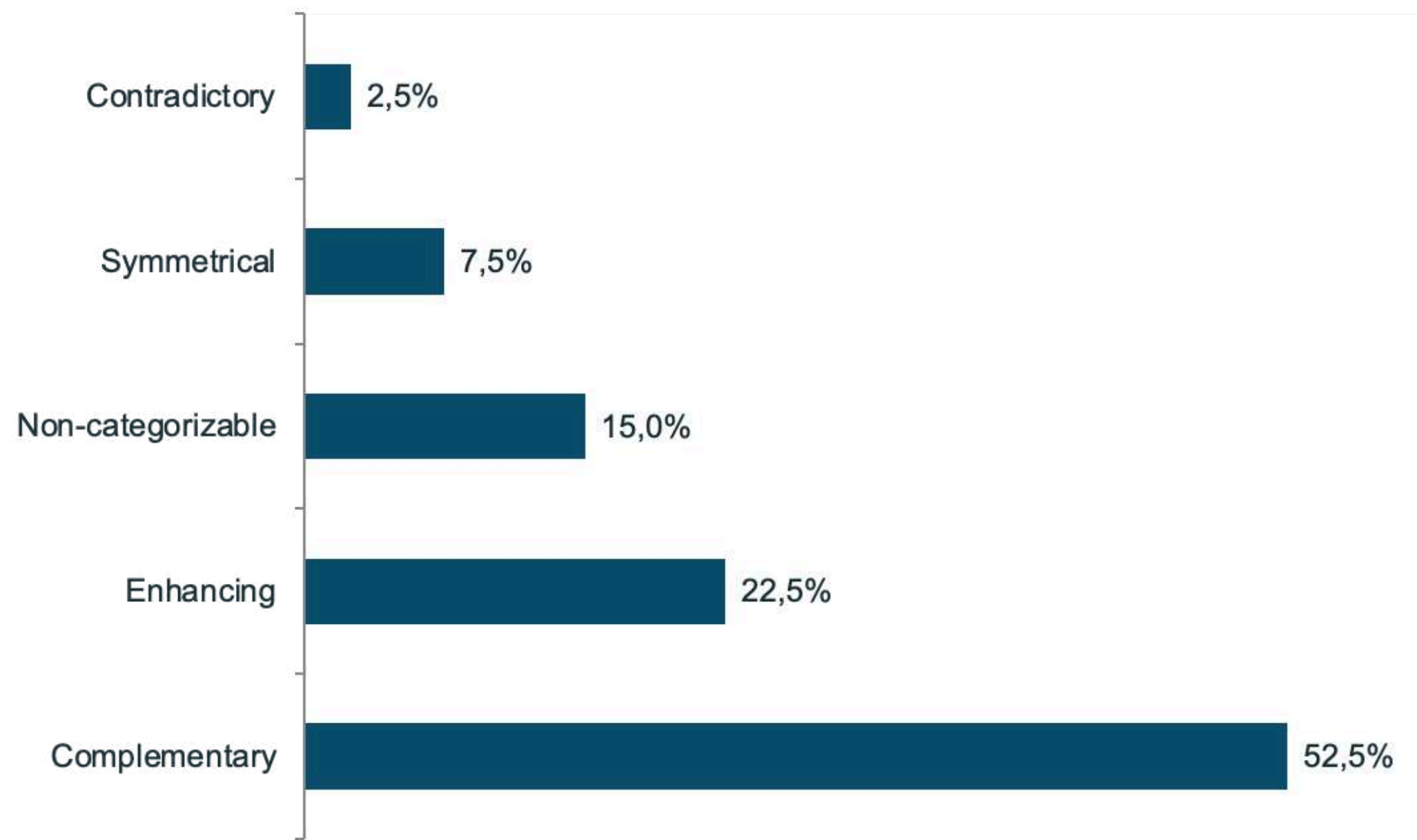
2

Triangulation

Semi-structured interviews with the 7 student design teams — one per chapter — on their design rationale.

RESULTS

Text-Image Relations Across 40 Pages

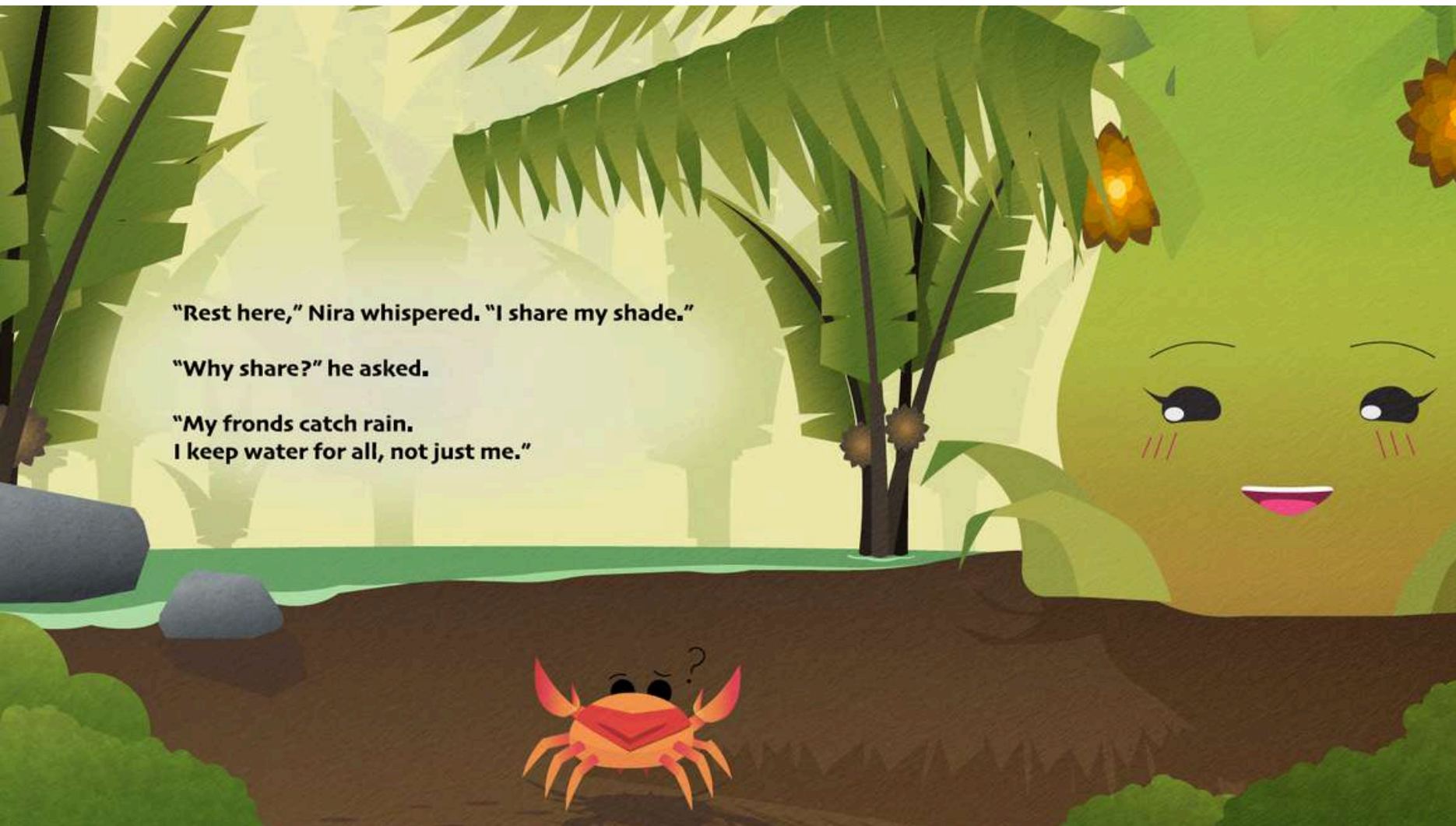


Complementary + Enhancing = 75%
Illustrations consistently carry meaning beyond what the text states — not merely depicting it.

No page coded as Counterpointing — the book does not use deliberate text/image tension as a narrative device.

RESULTS

Text-Image Relations | Complementary & Enhancing in Practice



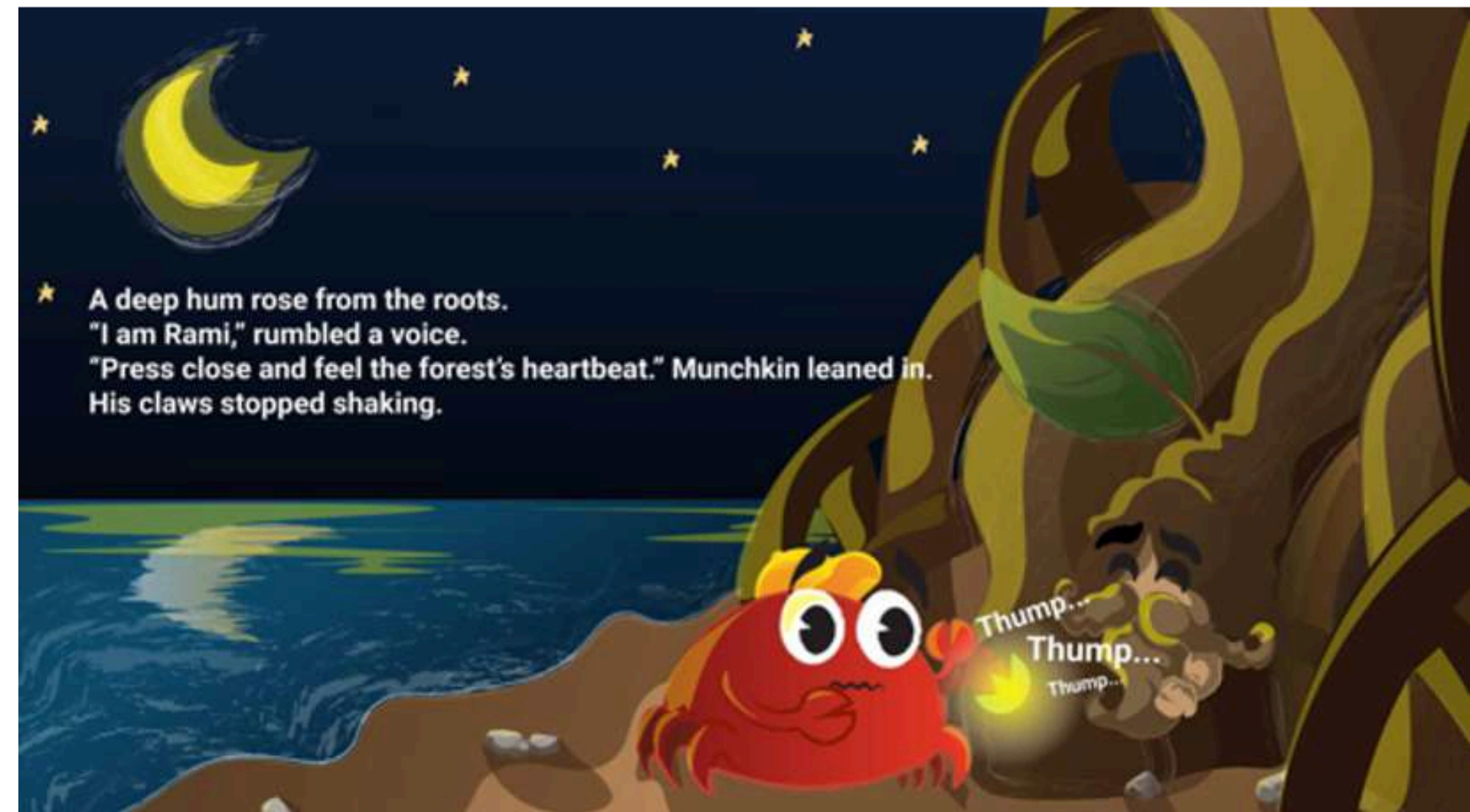
"Rest here," Nira whispered. "I share my shade."

"Why share?" he asked.

"My fronds catch rain.
I keep water for all, not just me."

Complementary — Chapter 6, Page 3

Text conveys Nira's dialogue explaining why she shares shade; illustration conveys her smile, blushing cheeks, and Munchkin's confusion — each mode contributes what the other lacks.



★ A deep hum rose from the roots.
"I am Rami," rumbled a voice.
"Press close and feel the forest's heartbeat." Munchkin leaned in.
His claws stopped shaking.

Enhancing — Chapter 1, Page 3

The "Thump...Thump..." sound effect and glow substantially extend the meaning of "heartbeat" in the text.

RESULTS

Text-Image Relations | Contradictory Case (1/40 pages)



Chapter 4, Page 3

Text describes turbulent waves; illustration shows a calm underwater scene

- 1. Deliberate — but unreconciled**
Follow-up interview: the calm scene is set at the seafloor, where surface waves wouldn't reach — a deliberate depth choice. But the team hadn't noticed this left "waves rock hard" unreconciled with the calmer setting.
- 2. If revised, they'd:**
Add turbulence to the water, and remove the sunlight — inconsistent with an underwater depth setting.

A deliberate compositional choice whose consequence for text-image consistency went unexamined — not a considered narrative device.

RESULTS

Diagramming Layout: Integrated Dominates

92.5%

Integrated

7.5%

Associative

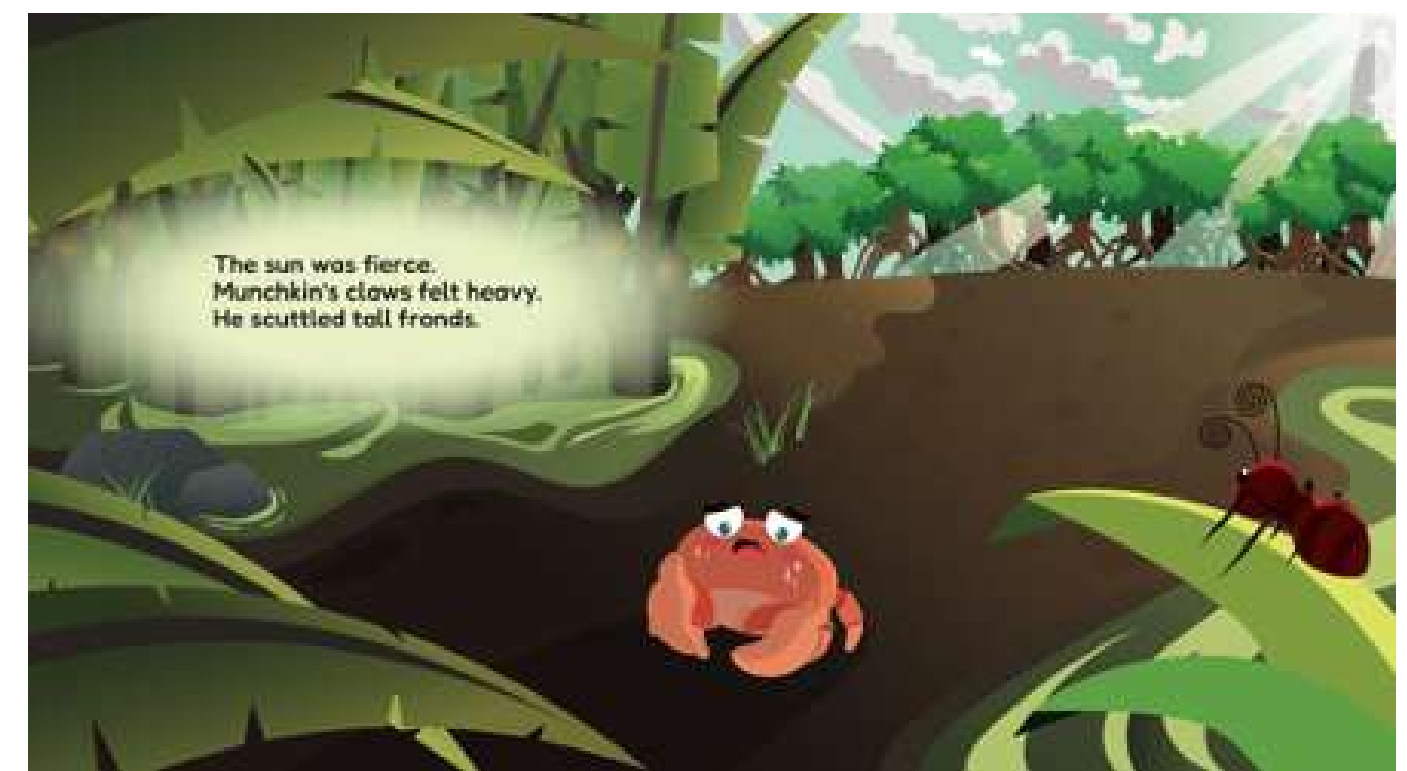
0%

Dissociative



Integrated (Dominant)

Text is placed directly within the illustration itself
— no bounding panel, no separate zone.



Associative (Rare)

Where a soft element creates a distinguishable zone —
appears on just four pages.

RESULTS

Framing & Field: Full-Bleed Throughout

100%

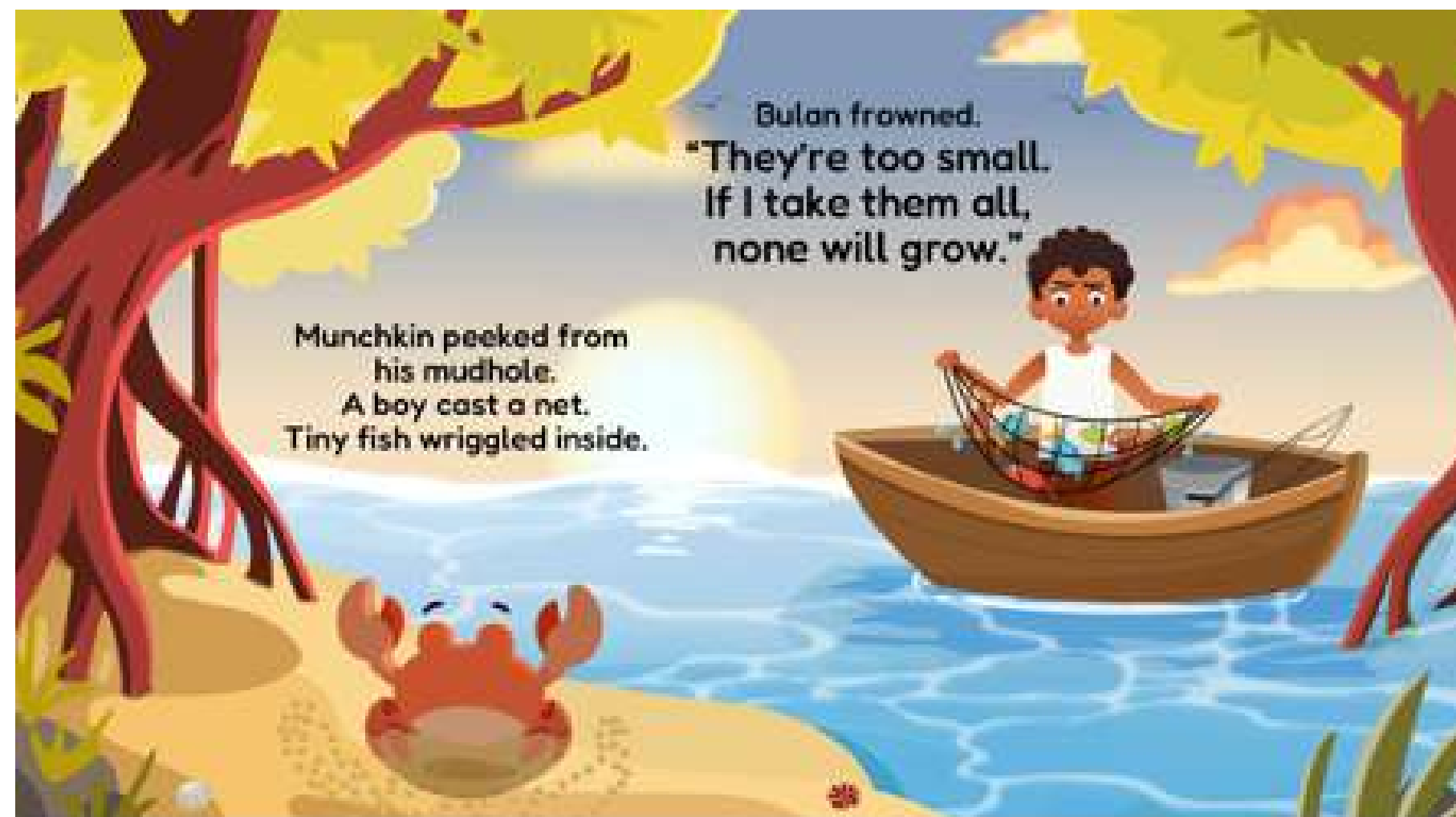
Full Bleed

7.5%

Bordered

0%

Extra-field



Full-bleed framing

Every one of the 40 pages extends fully to the canvas edges — no page uses a visible border as its default.

The few bordered pages coincide exactly with the Associative-layout exceptions — confirmed by the design team as an intentional readability aid, not an accident.

Zero extra-field elements: every scene is a self-contained visual unit — unlike cinematic styles that imply a world beyond the frame to build curiosity.

RESULTS

Text Placement: Merged, Not Boxed

95%

Merged with
illustration

5%

Boxed



Merged (Dominant)



Boxed (Rare)

Position:

Scattered (30%)
Top / left (22.5% each)
Center (17.5%)
Bottom (5%)
Right (2.5%)

Text proportion:

Minimal <20% on 60% of pages — illustration dominates the page even where text appears.

DISCUSSION

Why So Little Text? Supporting Emergent Readers

Minimal text on 60% of pages, and Complementary/Enhancing relations on 75% — designers say this wasn't just aesthetic.

1.

Chapter 7 design team

“The book is meant for children — even those who can't yet read. So we made illustration dominant on every page, so the story can be understood from images alone.”

2.

Chapter 6 design team

“From the illustration alone, a child who isn't yet a strong reader can still imagine what Munchkin is doing.”

A functional motivation — not visible from the coding data alone — behind the book's visual-verbal fusion.

DISCUSSION

A Coherent, Deliberate Design Language

All four clusters converge on one pattern:

Illustration-led, text-embedded page composition — visual-verbal fusion over separation.

1.

Chapter 6 design team

“We deliberately built in white space... to make it easier for children to read.”

Confirms the rare bordered/Associative pages were an intentional readability choice — not incidental.

2.

All 7 design teams

Each independently cited readability and negative-space management as primary considerations in text placement.

Suggests a shared design sensibility across teams — not convergence by chance.

DISCUSSION

Same Pattern, Two Different Outcomes

A character is voiced in the text but absent from the illustration — on two different pages. Follow-up interviews revealed two very different stories.

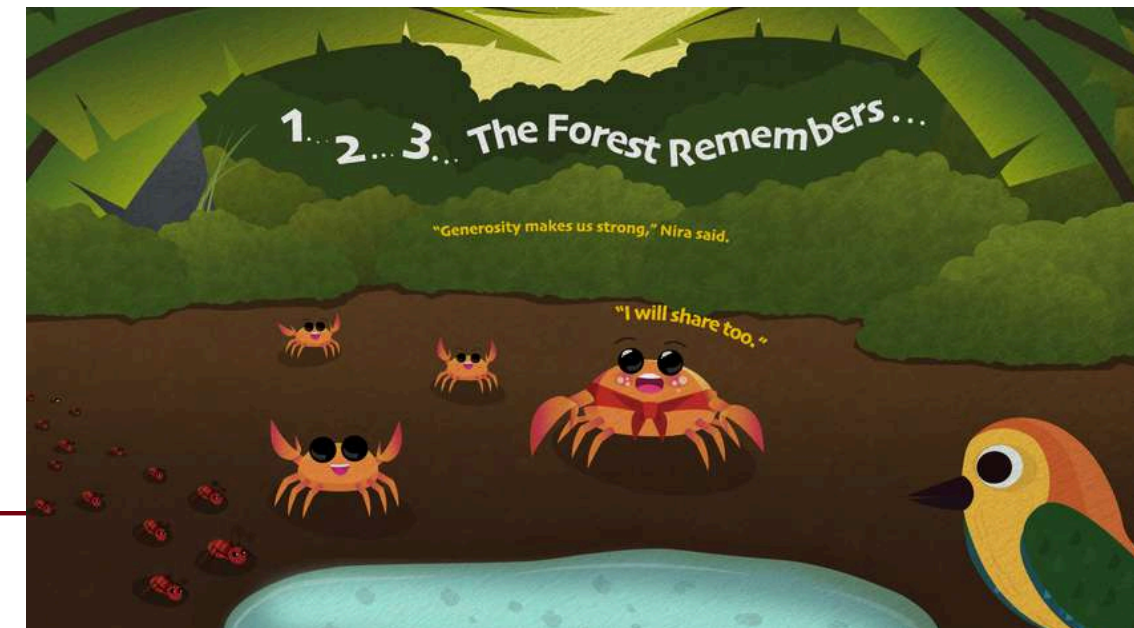
1.



Chapter 1 — Mama Crab

Intentional from the outset. But on reflection, the team acknowledged it as a flaw — Mama Crab is never visually introduced, leaving her absence feeling disconnected rather than motivated.

2.



Chapter 6 — Nira

A deliberate point-of-view device: the frame represents Nira's own perspective, with Nira positioned in front of the camera rather than within it. A device the team stands behind.

The same coding pattern, two different design outcomes: a structural similarity in the data doesn't guarantee a similar underlying rationale.

DISCUSSION

When Self-Report Diverges From the Data



Chapter 4 design team's own post-production reflection

“...the text placement wasn't very good. The text was positioned too far up, while the characters were positioned lower down.”

But our own coding tells a different story

This page's text placement was coded “top” position — identical to 8 other pages in the book. It was not independently flagged as anomalous by our coding instrument.



Designer self-report and systematic coding can diverge. We treat interview data as a record of design intent — not as independent confirmation of a compositional anomaly.

SUMMARY

Answering the Research Questions

1.

Text-image relations

Complementary (52.5%) and Enhancing (22.5%) dominate — illustration consistently adds meaning beyond the text.
Contradictory relations are rare (2.5%) and confined to one ambiguous case.

2.

Spatial organization

One consistent pattern of fusion over separation — Integrated layout (92.5%), full-bleed with zero extra-field (100% / 0%), and text merged without a boundary (95%).

Both answers converge on the same design language — confirmed as deliberate by the student designers themselves.

LIMITATIONS

Four Things This Study Does Not Claim

Single-coder analysis

A documented self-audit — not independent inter-rater reliability testing.

One case study

Findings describe this book's pattern, not digital storybooks as a genre.

Static, not yet interactive

Findings concern illustrative composition, not an interactive authoring platform's constraints.

Per-page coding misses foreshadowing

An unexplained detail on one page (e.g. an ant in Chapter 6) can connect to the next page — invisible to page-level coding alone.

CONCLUSION

A DELIBERATE, COHERENT — BUT UNEVEN — DESIGN LANGUAGE

WHAT WAS DELIVERED

Complementary/Enhancing relations, Integrated layout, full-bleed illustration, and merged text placement **are deliberate compositional choices** — confirmed by the student designers themselves, not an artifact of software constraints.

FUTURE WORK

As the interactive layer of this storybook is developed, future work should:

1. Examine how these patterns are preserved, adapted, or renegotiated once navigation and interactive elements are implemented.
2. Triangulate further with additional student-designer interviews and a larger sample of child readers.



Thank You

Discussion & Questions Welcome

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