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More Than Four Walls and a Roof: Visual Representations of Dwelling in Preparatory Children's Drawings

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Abstract. This paper investigates how the concept of a house is visually constructed in the drawings of preparatory children aged 4-5. While architecture is a field of expert knowledge, dwelling is an everyday human category encountered and represented by children before formal architecture-related instruction. The study analyzed 28 drawings produced by preparatory children who were given a simple prompt of "Draw a house" within a single 20-minute classroom session. Through descriptive frequency analysis and qualitative visual interpretation, the study identified a core set of recurring elements, including windows, doors, sloped roofs, and human figures, which together informed a visual prototype of the house. Beyond this core, the study also examined environmental elements, scale, and imaginative transformations that show variation in the visual schema. The findings suggest that the children's prototype is not a fixed architectural blueprint but a flexible visual schema incorporating human presence, environmental elements, variations in scale, and imaginative transformations.

Keywords: children's drawing, preparatory children, dwelling, visual content analysis, visual schema

1. Introduction

How does a child with no formal architectural training translate the complex concept of a "house" into a few lines that are readily recognizable? The ability to represent a house through a minimal schematic form is a striking phenomenon discussed in studies of children's drawing and building representations [1, 2]. It also suggests that children may use a simplified visual schema to organize what they know about familiar objects. For preparatory children, the "house" is a familiar architectural form in their everyday environment and a useful entry point for examining their understanding of the built environment.

The drawing of a house is more than a simple artistic exercise; it is a visual record of how children organize familiar spatial and social experience. It shows how they combine architectural signs, human figures, and environmental details into a coherent image. Previous studies have examined children's drawings as forms of visual meaning-making [3]. Gašić-Pavišić and Lazarević identified recurring architectural, human, and environmental elements in children's house drawings [4]. Building on this work, the present study examines these elements together with imaginative transformations in drawings by preparatory children aged 4–5 in Brisbane.

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Despite existing research, it remains meaningful to examine how preparatory children choose and arrange architectural and environmental elements when drawing a house. What features in the drawings make a house identifiable, and how do children incorporate functional and imaginative components? How is this visual schema graphically constructed? This study examines these questions through an analysis of 28 drawings produced by preparatory children. The architectural, human, environmental, and imaginative elements in the drawings are analyzed in terms of frequency and arrangement to explore how children's visual concepts of dwelling are represented in their artworks.

2. Research design and methods

2.1. Participants and drawing task

The study was conducted in a preparatory program in Brisbane, Australia on Mar 19, 2026. The participants were 28 enrolled children aged 4–5 years. No pre-selection criteria were applied based on drawing ability or background. The activity took place in a standard classroom setting. Each child was given a blank A4 sheet of paper, a set of 24 Prismacolor standard colored pencils, and several Crayola acrylic markers. They were presented with a single, simple instruction by their usual classroom teachers: "Draw a house." No further prompts, guidance, or definition of "house" were provided. Children were allowed to draw for 20 minutes and could talk with nearby peers if they wished. Drawings were collected at the end of the school day. Each drawing was assigned an identification number (D01–D28) for analysis.

2.2. Analysis

The analysis combined descriptive frequency counting with qualitative visual interpretation. Each drawing was treated as one unit of analysis. In this study, "visual prototype" is used descriptively to refer to recurring visual features and patterns in the drawings. The drawings were reviewed and coded for the presence and absence of recurring visual elements, including the following:

(1) architectural elements, including house outlines, roofs, windows, doors, chimneys, and other building-related elements.

(2) human elements, including one or more figures inside or outside the house.

(3) environmental elements, including the sun, trees, flowers, grass, birds, sky, and other outdoor elements.

(4) imaginative elements, such as houses transformed into spaceship-like or robot-like forms.

This coding procedure follows the logic of visual content and frequency analysis used in studies of preschool children's drawings [5].

Color use was also analyzed for major elements, including the house body, roof, door, windows, human figures, and decoration or other elements. Colors were grouped into broad categories such as red, orange, yellow, green, cyan, blue, purple, pink, and black.

Qualitative analysis was also carried out for selected representative drawings to describe the compositional patterns, recurring combinations, and imaginative transformations.

2.3. Ethical considerations

Permission for participation was obtained from parents and the school administration. All drawings were analyzed in anonymized form, and no identifying personal information is disclosed in this

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paper.

3. Results

3.1. Recurrence of visual elements

Some representative drawings are shown in Figure 1. The analysis of the 28 drawings revealed both repetition and variation. Several visual elements appeared repeatedly across the drawings. The most frequent element was the window, which appeared in 23 drawings (82.14%). This was followed by the rectangular outline in 22 drawings (78.57%), the door in 20 drawings (71.43%), and the sloped roof in 18 drawings (64.29%). Human figures appeared in 16 drawings (57.14%). Other recurring elements included the sun (9 drawings, 32.14%), the chimney (8 drawings, 28.57%), and flower/grass elements (6 drawings, 21.43%). The recurrence frequencies of all visual elements are presented in Table 1.



Figure 1. Representative examples of children's house drawings

Table 1. Recurrence frequency of visual elements in the 28 preparatory children's drawings

Element	Recurrence Frequency	Percentage
Window	23	82.14%
Rectangular Outline	22	78.57%
Door	20	71.43%

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Table 1. (continued)

Sloped Roof	18	64.29%
Human Figure	16	57.14%
Sun	9	32.14%
Chimney	8	28.57%
Flower / Grass	6	21.43%
Bird	4	14.29%
Tree	3	10.71%
Heart Icon	3	10.71%
Rainbow	2	7.14%
Blue Sky	2	7.14%
Cloud	1	3.57%
Cat	1	3.57%
Stars	1	3.57%
Fish	1	3.57%
Furniture	1	3.57%
Fruit	1	3.57%

3.2. Color use in the drawings

Children were free to choose any drawing colors. The results showed variation in how color was applied in the drawings of the houses, as shown in Table 2.

Table 2. Color use and frequency in the 28 preparatory children's drawings

Color	Housebody	Roof	Window	Door	Humanfigure	Decoration/other
Red	4 (14.3%)	3 (10.7%)	3 (10.7%)	1 (3.6%)	2 (7.1%)	7 (25%)
Orange	2 (7.1%)	3 (10.7%)	1 (3.6%)	0 (0%)	1 (3.6%)	10 (35.7%)
Yellow	3 (10.7%)	1 (3.6%)	1 (3.6%)	1 (3.6%)	1 (3.6%)	11 (39.3%)
Green	5 (17.9%)	1 (3.6%)	1 (3.6%)	1 (3.6%)	2 (7.1%)	9 (32.1%)
Cyan	2 (7.1%)	0 (0%)	2 (7.1%)	2 (7.1%)	0 (0%)	3 (10.7%)
Blue	1 (3.6%)	3 (10.7%)	8 (28.6%)	2 (7.1%)	4 (14.3%)	17 (60.7%)
Purple	4 (14.3%)	2 (7.1%)	6 (21.4%)	2 (7.1%)	3 (10.7%)	8 (28.6%)
Pink	5 (17.9%)	5 (17.9%)	6 (21.4%)	3 (10.7%)	9 (32.1%)	8 (28.6%)
Black	12 (42.9%)	10 (35.7%)	9 (32.1%)	11 (39.3%)	6 (21.4%)	18 (64.3%)

Note: Percentages indicate the proportion of the 28 drawings in which each color appeared for that element. Multiple colors could appear for the same element within a single drawing (e.g., two windows colored differently), so percentages do not sum to 100% across colors.

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4. Discussion

The results of this study suggest that preparatory school children's drawings of houses follow a structured yet flexible visual logic.

4.1. Analysis of Table 1: recurrence of visual elements

The frequency data in Table 1 reveal a pattern of more and less frequently represented elements in the children's house drawings. The four most recurrent elements, namely windows (82.14%), rectangular outlines (78.57%), doors (71.43%), and sloped roofs (64.29%), form what might be called the architectural core of the prototype. Notably, windows appear more frequently than any other element, including the rectangular outline (Figure 2). This suggests that windows are a recurring feature in the children's visual representations of houses.



Figure 2. Windows appear most frequently in the children's house drawings

The high recurrence of human figures (57.14%) is equally telling. The instruction was simply to "draw a house," yet more than half of the children spontaneously included one or more people (Figure 3). This indicates that the children's prototype of a house may not only be an architectural object, but also a dwelling space associated with its inhabitants. This interpretation is consistent with phenomenological accounts of home as a lived experience that extends beyond the physical building [6].



Figure 3. Human figures appear frequently in the children's house drawings

Environmental elements such as the sun (32.14%) (Figure 4), flowers and grass (21.43%) (Figure 5), and birds (14.29%) (Figure 6) appear in several drawings, suggesting that some children represent the house as embedded within a domesticated landscape.



Figure 4. The sun elements in the children's drawings

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Figure 5. Flowers and grass in the children's drawings



Figure 6. Birds in the children's drawings

The sun, in particular, appears as a frequent companion to the house, perhaps symbolizing safety, warmth, or simply a bright and cheerful world. Finally, the appearance of decorative elements, such as hearts (10.71%) (Figure 7) and rainbows (7.14%) (Figure 8), hints at a visual schema that is flexible and playful, not rigid or formulaic.



Figure 7. Hearts as decorative elements in the drawings



Figure 8. Rainbows as decorative elements in the drawings

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4.2. Analysis of Table 2: color use

The color data in Table 2 reveal several patterns worth noting. First, black is the most frequently used color across nearly all architectural elements: house body (42.9%), roof (35.7%), windows (32.1%), and doors (39.3%). This may partly reflect the use of black for outlining major elements. Its prevalence may also suggest that children prioritize form and outline over color fidelity when representing a house.

Second, several patterns emerge in the use of other colors. Pink appears frequently for human figures (32.1%) and decorative elements (28.6%), suggesting a possible affective association. Blue is notably common for windows (28.6%), perhaps reflecting an intuitive association between windows and the sky or outdoor daylight. Green appears most often for the decoration/other elements (32.1%), especially for trees and grass, which may indicate an environmental framing, meaning that houses are situated in or connected to nature.

Third, a range of colors appeared in the decoration/other elements across the sample, including black in 64.3% of drawings, blue in 60.7%, and yellow in 39.3%. These decorations, including hearts, flowers, rainbows, and stars, may not be necessary for the house to be recognizable as a house, yet children add them willingly. This may suggest that for the children, a house is not merely a functional shelter but a site of affection and personal expression.

4.3. Environmental elements: the house within a domesticated world

Beyond the standard architectural core, environmental elements recurred across the sample. The sun was present in nearly one third of all the drawings (32.14%), flower and grass elements appeared in 21.43%, birds in 14.29%, and trees appeared in 10.71% of the drawings. These figures show that some children included environmental elements alongside the house, situating it within a broader setting.

The relationship between architecture and environment warrants closer examination. In some drawings, the environmental elements appear to form a coherent setting that frames the house. These arrangements may reflect associations between the house and familiar surroundings. The sun, almost always drawn with radiating lines or a smiling face, usually sits in the upper corners of the page, while flowers and grass mostly line the bottom of the page, birds tend to fly nearby, and trees often stand to one side. Together, these elements construct what is described here as a "domesticated landscape", a visual setting that brings the house and outdoor elements together.

This tendency to embed the house within a friendly environment suggests that, for some preparatory children, the concept of a house may be understood in relation to a larger environmental setting.

4.4. Human figures

Beyond the finding that human figures appear in over half of the drawings (57.14%), what merits closer attention is not merely their presence but what their presence may signify within the larger emotional and social landscape of the child. When a preparatory child voluntarily adds a person to a drawing of a house, they are possibly doing more than populating an empty structure. They may be situating themselves, their relationships, and their understanding of social belonging within a coherent visual narrative.

The human figures are positioned in relation to the house. In some drawings, the figure stands at the door, as if about to enter or exit. In several notable cases, multiple figures appear together,

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holding hands or standing side by side. These compositional choices suggest that the child associates the house not just with a single inhabitant but with a network of social bonds. Some arrangements may suggest an adult and a child or a family unit, although the figures' identities were not confirmed. In one instance, two figures, one larger and one smaller in scale, are standing next to each other under a rainbow. The house, in this sense, can be read as a stage for relational life, a space where people live, greet one another, and care for each other.

4.5. Size and scale

The scale of the houses depicted was largely consistent across the drawings. The vast majority of children depicted houses of one or two stories; only a single child drew a tall, multi-story building (D26). This exception illustrates variation in the scale of the houses represented, although the reason for this child's choice cannot be established from the drawing alone.

Why were tall buildings uncommon when children were asked to draw a house? Several explanations are plausible. First, familiarity with single-story spaces, backyards, classrooms, and playgrounds may influence what children draw. High-rise apartments, elevators, and multiple floors may be less familiar or may be associated with other building categories. These possibilities were not investigated in the present study. Second, there may be a preference for manageable drawing forms. A familiar house shape may be easier to represent as a whole within a single sheet of A4 paper. Third, there may be an emotional dimension to scale; a small or medium-sized house may feel intimate and personal, whereas a very tall building may feel impersonal, institutional, or even intimidating. These explanations remain tentative because the children's residential experiences and reasons for choosing particular building forms were not investigated.

4.6. Imaginative transformations

Perhaps the most unexpected finding of this study was the presence of drawings that transformed the house into imaginative forms. In several drawings, the house was depicted as a spaceship (D09), a robot with eyes and a mouth (D15), or a mansion with what appears to be legs (D27). One child drew a house so abstract that it consisted of scribbles. Another child (D18) drew a house with wings, adding an imaginative variation to the house form.

At first glance, these drawings appear to depart from the visual prototype identified in Table 1. However, a closer examination reveals that several of these fantastical houses still contain core architectural elements. They have doors, windows, and often sloped roofs, even when the overall form deviates from a conventional house shape. The child is not abandoning the prototype but rather playing creatively with its boundaries. These examples suggest that the visual prototype can accommodate creativity and variation while retaining recognizable house features, an interpretation informed by Rosch's discussion of prototypes and category boundaries [7].

This flexibility suggests that familiar house forms can be varied imaginatively. The drawings do not establish differences in conceptual maturity between children who drew conventional and fantastical houses. In this sense, the fantastical drawings are not outliers or errors; they are examples of imaginative engagement with the category of "house." Moreover, these transformations suggest that the house can become a launching pad for adventure or a companion in imaginative play.

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5. Conclusions

This study set out to investigate how preparatory children aged four to five visually represent the concept of a house in their drawings. Through a mixed methods analysis of 28 drawings produced in response to the simple prompt "draw a house," several key findings emerged regarding the visual prototype of dwelling in young children.

5.1. Summary of findings

First, the children's visual prototype of a house consists of a core architectural triad comprising windows, doors, and sloped roofs, all typically contained within a rectangular outline. Among these elements, windows appeared most frequently, appearing in 82.14% of all drawings and even outranking the rectangular outline itself. This finding highlights the recurrence of windows in this sample, although their significance to the children would require further investigation.

Second, the spontaneous inclusion of human figures in 57.14% of the drawings, despite no instruction to do so, suggests that some children represented the house as an inhabited dwelling. The figures may indicate an association between houses and social relationships. Their identities and personal significance cannot be established from the drawings alone.

Third, environmental elements such as the sun (32.14%), flowers and grass (21.43%), birds (14.29%), and trees (10.71%) appeared across the sample, showing that some children embed the house within a domesticated landscape. The sun, almost always drawn with radiating lines or a smiling face, may be interpreted as suggesting warmth or happiness. Flowers and grass may contribute to an impression of a cared-for setting. Together, these elements suggest a visual connection between the house and its natural surroundings. The house can be read as existing in harmony with a friendly, welcoming world.

Fourth, the predominance of one or two story houses, with only one tall, multi-story building, indicates that low-rise forms were common in this drawing task. This may reflect familiar environments or conventions of house drawing, although these possibilities were not investigated. The finding raises questions for further research about how children perceive housing scale.

Fifth and finally, the presence of fantastical transformations, including houses drawn as spaceships, robots, and winged forms, suggests that the visual prototype is not rigid but flexible and generative. Several of these drawings still contain core architectural elements, including doors, windows, and roofs. The child is not abandoning the prototype but playing creatively with its boundaries. These transformations suggest flexibility in visual representation, although they do not establish a particular level of cognitive maturity.

5.2. Theoretical contributions

This study makes several contributions to the existing literature. First, it applies a cognitive prototype perspective, following Rosch [7], to preparatory children's house drawings. While prototypes have been studied for categories such as birds, furniture, and colors, the present study focuses on the category of "house" in drawings by preparatory children. This study identifies recurring architectural features, including windows, doors, roofs, and rectangular outlines, alongside human and environmental elements that contribute to variation in the drawings.

Second, this study brings developmental psychology and environmental psychology into discussion by exploring possible emotional and relational meanings in children's house drawings. Human figures, the smiling sun, and decorations such as hearts and flowers allow the drawings to be

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read as representations of warm, cared for, and livable spaces. These meanings remain interpretive because the children were not interviewed.

Third, this study illustrates how descriptive frequency analysis and qualitative visual interpretation can be combined in research on children's drawings. This mixed methods approach allows for both the identification of broad patterns and the close reading of individual drawings, capturing both the general and the idiosyncratic.

5.3. Practical implications

The findings of this study have potential practical implications for several fields. For early childhood educators, the house drawing task can serve as a starting point for conversations about children's ideas of houses and home. A child who omits windows or doors, or who draws a house isolated from any environmental elements, could be invited to explain their drawing without assigning a predetermined emotional meaning to these features. For architects and urban designers, the findings raise questions for further research about housing scale, access to nature, and visual connection to the outdoors. For parents, the drawings offer opportunities to discuss children's own ideas about people, dwelling, and belonging.

5.4. Limitations

This study has several limitations that should be acknowledged. First, the sample size is small, consisting of 28 children from a single preparatory school in Brisbane, Australia. This limits the generalizability of the findings to other cultural, socioeconomic, and geographic contexts. Second, the study is cross sectional, capturing only a single moment in time. A longitudinal design would be needed to track how the visual prototype of a house develops and changes as children grow older. Third, the analysis is interpretive. Both the coding of visual elements and the interpretation of their meanings involve researcher judgment. Another researcher might code or interpret the same drawings differently. Fourth, the study did not include follow up interviews with the children. Such interviews would have allowed children to explain their own drawings in their own words, providing valuable insider perspectives on the meanings they intended.

5.5. Future directions

Future research could address these limitations in several ways. A larger, more diverse sample across multiple schools and cultural contexts would support cross cultural comparison and help assess how widely the findings apply. Longitudinal studies could track the same children over several years to observe how the prototype evolves, perhaps shifting from the playful, imaginative houses of the preparatory years to more realistic and detailed representations in later childhood. Experimental studies could test specific hypotheses, for example by asking one group of children to draw "a house" and another group to draw "a building," to see whether the human figure appears less frequently in the latter condition. Finally, future research should include child interviews or drawing conversations, in which children are asked to explain their drawings after completing them. This would add a valuable layer of child centered meaning making to the analysis.

5.6. Final remarks

In the end, this study returns to the question posed in the introduction: how does a child with no formal architectural training distill the complex concept of a house into a few lines that are readily

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recognizable? The drawings suggest that the child does not distill the house down to a pure architectural essence. Instead, the child expands the concept outward. A house is a window to see the world, a door to enter and exit, a roof for protection, a person to inhabit it, a sun to warm it, flowers to cheer it, and sometimes, wings to let it fly. The preparatory child's drawing of a house is not a blueprint. It may express a wish, a memory, a relationship, or a piece of the self, all drawn together on a single sheet of paper. That is what makes a house a home. And that is what these 28 drawings, in their own small and colorful way, invite us to consider.

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