

# Children's Painting as a Tool for Communicating Needs and Values in Terms of Spatial Planning

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**Abstract:** The article undertakes an analysis of drawings by children aged 5–6 years as an important source of knowledge about the perception of living space and basic needs that can be used in the architectural design process. The study, carried out in the form of art workshops, revealed that the children's artwork focused on key elements.

The children's work was characterised by simplified forms, indicating their natural tendency to prioritise function over decorativeness. This approach can provide valuable inspiration for designers aiming to create more welcoming and intuitive spaces. The authors emphasise that children's representations of space can not only support the development of minimalist and functional architectural solutions, but also address the emotional needs of users.

The article emphasises the potential of children's imagination as a source of innovative spatial solutions and points to the need to extend the research, both in terms of the diversity of participants and cultural context. Complementing the research with comparisons between different age groups or regions could provide even more diverse and practical conclusions for human-centred architecture.

**Keywords:** functional design, child-centred spatial design, children's drawings

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## Introduction

The perception of space by children is spontaneous and intuitive, as evidenced by the drawings they create. Despite their apparent simplicity, these drawings offer a valuable insight into how children perceive their immediate living environment. Children's works not only reflect the external reality, but also convey the internal emotions and necessities of the artists. This is a crucial consideration in the design of functional and emotionally supportive spaces (Said, 2007).

Drawing a house, which most often takes the form of a rectangle with a triangular roof, is interpreted as representing archetypal and cultural concepts of space. All symbols make it easier for children to represent abstract ideas, as well as the world they already know from their own experience (Olaoye & Abdallah-Tani, 2024). These images are not the product of children's imagination; rather, they are a reflection of their perception of what constitutes home in the context of their everyday lives. This indicates that children select these shapes because they are most frequently observed in their immediate environments and represent forms that are recognisable and comprehensible to them. This, in turn, has significant implications for the design of welcoming spaces. Children's intuitive painting of houses (with the house represented as a rectangle and the roof as a triangle) enables them to perceive spaces as comprehensible and secure. Such simplifications are culturally and socially associated with stability and comfort (Fabris et al., 2023).

The incorporation of children's perceptual perspectives in the design process has the potential to result in the creation of environments that more effectively address fundamental human needs, such as a sense of security, comfort, and integration with nature. This approach can also enhance the user feelings and experience (Spence, 2020).

## Objective, research questions

The objective of this article is to examine the manner in which children's drawings reflect fundamental needs and values pertinent to the design of spaces. In addition, the analysis considers the inferences that can be drawn regarding primary human needs from the drawings. Moreover, the article considers how the simplified shapes observed in children's drawings can inform contemporary architectural design, leading to the creation of functional, aesthetically pleasing, and human-centric solutions.

## Materials and methods

This article uses an integrated research approach, combining the analysis of children's drawings with a review of the scientific literature. The empirical research focused on the interpretation of children's artworks, which made it possible to determine their perception of space and to identify key architectural elements in the visions presented. At the same time, an analysis of the literature was carried out, including work on children's imagination and symbolism in drawings. The combination of these two methods allowed conclusions to be drawn that highlight the potential of children's concepts as inspiration for the design of user-centred spaces.

## Course of the study – art workshop

The drawings were produced during an art workshop held at the Faculty of Construction and Architecture of Lublin University of Technology. The study was conducted on a group of 30 children aged 5–6 years, over a period of 1.5 hours. The participating children were assigned the task of creating a painting entitled "My Dream House". The children were provided with tempera paints and large sheets of B2-size paper, which they were permitted to utilise freely in order to experiment with form and composition.

At the outset, it was ensured that each child correctly comprehended the instructions, after which the painting commenced. It was deliberately decided that no specific requirements should be imposed on the appearance or content of the drawings, in order to allow the children to express themselves spontaneously. It was crucial to establish a conducive environment that would foster a sense of autonomy and enjoyment, thereby minimising the potential for stress among the preschoolers. This approach enabled the participants to engage fully with the creative process and to present their ideas in an authentic and sincere manner.

As part of the post-painting data collection process, individual interviews were conducted with the children, in which they were asked to describe their artwork in detail. The children elucidated the significance of the various elements depicted, the rationale behind their inclusion, and the personal meanings they ascribed to them. The combination of the analysis of the drawings with the interpretations provided by the authors

themselves facilitated a more comprehensive understanding of the message and the most salient elements from the children's perspective.

In order to gain insight into the paintings' content, the most frequent elements were identified and their function and meaning were assessed from the perspective of the child. The houses depicted in the paintings frequently featured classical architectural elements, including doors, windows, and a pitched roof (Fig. 1). In addition to the construction of houses with a distinctive roof, the children also created towers and high-rise buildings (Fig. 2). Furthermore, consideration was given to the context in which the painted houses were situated. Additionally, the children frequently incorporated elements such as dog kennels, swings, tree houses, and plants (Fig. 3). It is noteworthy that animal figures are a prominent feature in the drawings, which suggests a need to organise a space for them (Fig. 4). Additionally, the youngest children produced works that reflected their vivid imaginations, encompassing a range of inspirations from fairy tales to surreal dreams. The composition of the paintings proved to be a valuable additional source of information. This enabled us to ascertain which elements the children considered to be of primary importance.

The statements provided by the participants were of significant value. During the course of the conversation, the children were able to articulate their thoughts and feelings in a way that was not possible with a paintbrush. This enabled the researchers to ascertain the reasons behind the children's colour choices, the symbolic meanings they ascribed to the drawing elements and their aspirations for the design of house. The data obtained was collated in the form of notes for subsequent analysis.



**Fig. 1.** Painting work by Wojciech, age 6. Source: authors' own collection



**Fig. 2.** Painting work by Jacek, age 6. Source: authors' own collection



**Fig. 3.** Painting work by Zosia, age 6. Source: authors' own collection



**Fig. 4.** Painting work by Patrycja, age 6. Source: authors' own collection

## Results

### Content analysis of paintings

The works produced by the children were diverse in nature and exhibited a multitude of characteristics indicative of children's imaginative processes. The resulting works demonstrated how the children perceive the house and which elements they pay particular attention to. What many of the works had in common was the way in which the doors, windows or roof were depicted. The entrances usually had a distinctive colour (e.g. orange or green) that made them stand out from the façade. Windows were depicted as blue (glass) squares. The roof was painted triangular, usually red – in some works it was emphasised how important its role was, as it protected from weather phenomena such as rain (Fig. 5).

Additionally, another type of development, namely a high-rise building, also emerged among the works. In his drawing (Fig. 6), Nikodem depicts a tall block with a golden roof. He states that he would have lived on the seventh floor, which he would have climbed by ladder. [Source: participant statement] In addition, Alexander painted a tall building (Fig. 7), which features a multicoloured Eiffel Tower and an adjacent clock tower, the latter of which is accessible via a ladder. It is noteworthy that numerous other works depict ladders, which are commonly found in playground equipment.



**Fig. 5.** Painting work by Laura, age 5. Source: authors' own collection



**Fig. 6.** Painting work by Nikodem, age 5. Source: authors' own collection



**Fig. 7.** Painting work by Aleksander, age 5. Source: authors' own collection



**Fig. 8.** Painting work by Adam, age 5. Source: authors' own collection



For the young designers, animals played an important role, not just pets that are family members. Adam's drawing (Fig. 8) shows visions where not one building appeared, but a whole village of animal houses (green, blue). The heart-shaped house was for his dog. [Source: participant statement]

Additionally, there were works where the boundaries of imagination were pushed to their limits, and the houses designed by children evoked a sense of whimsy and fantasy, reminiscent of fairy tales and the imaginations of children. The girls Helena and Hanna aspire to become princesses [Source: participant statement], as evidenced by their painting of a palace with turrets and a large entrance gate for a dragon. The entire structure is painted in shades of pink and adorned with floral motifs (Fig. 9, Fig. 10). Lila and Martyn painted cat-shaped houses, which appear to have been inspired by the fairy tale "Gabby's Dollhouse" (Fig. 11, Fig. 12). Tosia's dream house is notable for its incorporation of a tree house, which is situated within a field of carrots, dill, and flowers, likely reflecting her interest in gardening. It is reasonable to posit that her dog and hamster would reside with her [Source: participant statement] (Fig. 13).



**Fig. 9.** Painting work by Helena, age 6. Source: authors' own collection



**Fig. 10.** Painting work by Hanna, age 6. Source: authors' own collection



**Fig. 11.** Painting work by Lila, age 5. Source: authors' own collection



**Fig. 12.** Painting work by Martyna, age 5. Source: authors' own collection



**Fig. 13.** Painting work by Tosia, age 5. Source: authors' own collection

## Simplification of forms

A distinctive feature of the children's drawings is the omission of superfluous details, with a concentration on the symbolic and functional aspects of the house. In some instances, the structures were depicted using shapes and colours that distinctly delineated key elements, such as walls, windows, doors, roofs, and chimneys. The positioning of blue rectangles or divided squares served to indicate the location of windows. The doors were depicted as rectangles of vibrant hues, sharply delineated from the walls. The most common representation of a roof was a triangle superimposed on a square, typically in red. In some instances, a pattern of semicircular lines was used to symbolise roof tiles. Above the roofs, children added brown trapezoids to signify chimneys. The smoke from the chimneys was frequently represented by wavy brown lines.

The visual elements of the environment, including grass, trees and flowers, were depicted in a relatively straightforward manner. The representation of grass was achieved through the use of a green stripe situated at the lower edge of the paper. The trees were depicted as brown lines terminating in green circles at the apex, symbolizing the crowns of the trees. The floral elements were depicted with green stems and two lateral leaves, with circular elements arranged in a petal-like configuration at the apex. Furthermore, meteorological elements were frequently incorporated, including the sun as a disc with radiating segments, clouds depicted as white or blue, and the sky represented as a blue line along the upper edge of the page. Furthermore, many illustrations incorporated hearts of varying hues, which the children inscribed with dedications to their parents.

In the course of interviews with the children, a significant number of them pointed their preferred colours as a medium for the creation of their artwork. The majority of female participants selected the colour pink, which was identified as their preferred hue. In contrast, the male participants predominantly employed blue, green, or brown. It is noteworthy that when discussing their preferred colours, the male participants indicated a particular preference for a shade of blue described as "navy blue" [Source: participant statement]. A significant number of paintings employed all the available paint colours on the palettes (white, yellow, orange, red, pink, blue, green, brown), yet the children did not combine these colours.

## Interpretation

In their visual perception, children tend to focus on essential and functional elements, while disregarding superfluous decorative elements. This natural simplification can serve as a valuable guideline for designers seeking to create more intuitive and child-friendly spaces. It is crucial to prioritise the essential functions of a space, such as ensuring doors operate correctly and providing adequate natural light through windows, rather than focusing on superfluous embellishments. In the context of designing facilities and equipment for children, minimalism is a crucial consideration. A child-centred approach to space posits that a minimalist design enhances the comfort and comprehensibility of a space, whereas an excess of embellishments can impede these qualities.

Children who depict the home in a traditional way, using simple shapes, reflect their concept of security and a sense of stability. A key role is played in their works by the family, understood not only as parents (mum and dad), but also animals, which are an important element in many of the representations. The need for comfort and harmony is reflected in the depiction of houses surrounded by greenery and spacious, open landscapes.

In children's paintings, the influence of culture and the manner in which children express their personal desires and needs, as well as elements characteristic of their social and cultural environment, such as housing estates and multi-family buildings, or red-tiled roofs, are significant factors determining the content of their drawings (Fabris et al., 2023).

## Literature review – analysis of available studies

The topic of children's colour selection is worth analysing. Research by Katarzyna Krasoń from the University of Silesia 'Paint me red and blue: On colours in children's visuals' 2015 involved children aged four and five choosing their favourite colours from red, blue, yellow, green, brown and black. Among girls, red was the most favoured colour, while boys preferred blue. In the case of green, differences in preference were age-dependent, with boys aged 4 years more likely to choose green than 5-year-olds. In contrast, more 5-year-old girls liked the colour green compared to 4-year-old girls. The colour brown was preferred more by 4-year-olds, and the colour yellow was indicated by about the same number of children in each age group. The colour black was rated negatively by the respondents (Krasoń, 2015).

In the second part of the study, the children were asked to draw what they associated the colour with. The 4–5 year olds correctly associated the items with the colour symbolism by drawing objects in the corresponding colours. Most of the objects drawn were universally recognised as equivalents of the colours in question, suggesting that the preschoolers had mastered some cultural colour schemes and coded symbols. The media had a strong influence on these associations, as the drawings included fairy tale characters such as the Smurfs and Winnie the Pooh, showing that film content also shapes symbolic connotations. (Krasoń, 2015).

The depiction of the home by children frequently exhibits a pattern that is commonly used in construction, particularly within culture. As evidenced in the study "This is my family", there are notable differences in children's family drawings across cultures. The Journal of Cross-Cultural Psychology corroborates the assertion that a specific civilisation exerts a profound influence on children's perception of the world. The study, which involved the participation of children from Germany, Turkey, and Cameroon, took into account the varying perceptions of the family across these cultures. The study unequivocally asserts that children's drawings are a reflection of their immediate surroundings, including the architecture (Gernhardt et al., 2013).

## Discussion

Designing spaces for children takes into account their perceptions, not those of adults. Children perceive the environment primarily through the lens of function rather than form or aesthetics. By using an interdisciplinary approach that combines child development, architecture and landscape, it is possible to create a space that promotes children's physical, cognitive and social development. They learn and develop through interactions with their environment, both physical (e.g. playing in the hospital garden) and social. The design of children's spaces should take into account their sensory, motor and social needs to promote attachment to place, creativity and positive feelings about space. It is also important to integrate outdoor spaces (e.g. green spaces) in settings such as nurseries or hospitals (Said, 2007) and in children's immediate environment, as research has shown.

The drawings produced by children at any stage of their artistic development can be considered a valuable source of information about their personality, feelings and experiences. The utilisation of plastic creativity serves to facilitate the intellectual and emotional development of the child. The mental experiences and living environment of the child exert a considerable influence on the content and form of their drawings. In comparison to writing, drawing represents an earlier means of describing reality. The act of drawing can be employed to explore a child's interests, views and attitudes. An analysis of the children's work reveals a multitude of elements indicative of their multifaceted psychological experiences and personality (Dukša, 2011).

## Practical implications

The analysis of children's drawings can provide valuable insights for contemporary architectural design. In their drawings, children tend to focus on the most basic and functional aspects of a given space, such as windows, doors, roofs, and chimneys, while disregarding superfluous details. This approach, which reflects minimalism, can inspire architects to design spaces that prioritise functionality and the emotional experience of the users. Such spaces facilitate a sense of safety for occupants, particularly children, which is a fundamental aspect of their comfort and security. A focus on functionality rather than ornamentation facilitates the creation of spaces that have a beneficial impact on users' daily lives, eliminating superfluous distractions and simplifying interaction with the environment.

It is not uncommon for children to envisage a domestic environment situated in close proximity to the natural world, encompassing a variety of flora and outdoor spaces. This can be seen as a reflection of their innate desire for proximity to nature and expansive open spaces. In the context of contemporary design, the incorporation of features such as windows that permit the entry of natural light becomes a pivotal aspect. In addition to their aesthetic function, windows serve a practical purpose in children's drawings, providing adequate light to the space and facilitating contact with the outdoors. The doors, which the children typically painted in colours that starkly contrast with the wall colour, symbolise the significance of integrating the house with the external environment. This also responds to the needs of modern users, who are increasingly seeking contact with nature, even in urban environments.

## Limitations of the study

The scope of the study was constrained for a number of reasons. Firstly, the study involved a relatively small group of children aged between five and six years old, with only 30 participants. The relatively small sample size may limit the generalisability of the findings, particularly in terms of extrapolating the results to a larger population. Additionally, the study was conducted in a single region of Poland, which, when considered alongside the geographical limitation (the study focused on one country and, consequently, one continent), may have an impact on the results. This is because differences in children's perceptions of the topic may be attributed to cultural, educational and social conditions that are specific to the area. Moreover, the nature of the children's work, which was schematic, may be attributable not only to their capacity to perceive space, but also to their level of artistic proficiency, which may be constrained by the age of the participants and the particulars of the workshops conducted.

## Directions for future research

The aforementioned study, which was based on preschool workshops, merely exemplifies the potential for analysing children's drawings. It would be beneficial to conduct larger-scale studies in the future, with the aim of providing detailed and more sophisticated visions of children's homes. This would enable the generation of more elaborate conclusions. One avenue for further investigation would be to undertake a comparative analysis of children's drawings across different age groups or cultural contexts. Such an analysis could elucidate the impact of diverse experiences and environments on children. Such an approach would allow for an investigation of how children from disparate cultural backgrounds represent similar themes. An analysis of external influences on children's drawings could also constitute an important component of future research. Prior to commencing the assignment, children could be presented with photographic material, interviewed, or specific ideas could be proposed while they are engaged in drawing. This research will assist in elucidating the manner in which these interventions modify children's creativity and the extent to which different visual and verbal stimuli influence their work. Furthermore, children frequently possess an unbound imagination, which can motivate architects to apply innovative solutions to designs based on children's needs. This research could encompass practical projects in which children are actively involved in the creative process and their ideas are truly implemented and tested.



## Summary

The incorporation of fundamental human needs into design, such as safety, comfort and connection to nature, can not only result in the creation of more sustainable and functional places, but also enhance people's wellbeing and facilitate lasting positive change in communities (Lami & Mecca, 2021). These needs are deeply ingrained in our psyche, as evidenced by the drawings children create. The findings of our research indicate that children are able to intuitively identify the relationship between architecture and human life.

Architects may draw inspiration from children's visions, which can inform the design of minimalist spaces that adhere to socially established patterns and evoke a sense of emotional comfort. The drawings produced by children indicate that the design of a home should be straightforward, serve a clear purpose and incorporate features that instil a sense of security. Such elements as coloured doors, open windows and roofs are not merely aesthetically pleasing but also serve a functional purpose. The incorporation of such straightforward yet significant elements into architectural designs, accompanied by an appropriate colour palette, can foster a greater alignment between the built environment and the emotional needs of users, particularly children. The simplifications proposed by children can serve as a foundation for the development of innovative architectural designs that integrate functionality with the universal symbolism of space.

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## Malarstwo dziecięce jako narzędzie komunikowania potrzeb i wartości w kontekście planowania przestrzennego

**Streszczenie:** Artykuł podejmuje analizę rysunków dzieci w wieku 5-6 lat jako ważnego źródła wiedzy na temat postrzegania przestrzeni życiowej i podstawowych potrzeb, które można wykorzystać w procesie projektowania architektonicznego. Badanie, przeprowadzone w formie warsztatów plastycznych, ujawniło, że prace dzieci koncentrowały się na kluczowych elementach.

Artykuł podkreśla potencjał dziecięcej wyobraźni jako źródła innowacyjnych rozwiązań przestrzennych i wskazuje na potrzebę rozszerzenia badań, zarówno pod względem różnorodności uczestników, jak i kontekstu kulturowego. Uzupełnienie badań o porównania między różnymi grupami wiekowymi lub regionami mogłoby dostarczyć jeszcze bardziej zróżnicowanych i praktycznych wniosków dla architektury skoncentrowanej na człowieku.

**Słowa kluczowe:** projektowanie funkcjonalne, projektowanie przestrzenne skoncentrowane na dziecku, rysunki dzieci