

A literature review on the impact of architectural elements on the well-being of users of buildings

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Abstract: *Architecture is a comprehensive and multidimensional discipline that incorporates diverse components, each of which holds significant importance in influencing the design and operational aspects of a structure. These fundamental elements serve as the foundational constituents of architectural design, significantly contributing to the overall visual appeal, functional efficiency, and user engagement of a building. There are various pivotal elements of architecture: Scale and proportion, Balance, Light, Colour, Line, Texture, Ornament, Rhythm, and Space. This paper examines the key impact of architectural elements on people's well-being in buildings to offer insight to designers on what to focus on when designing buildings. The study is a literature review carried out utilizing a qualitative method. Data gathered is secondary and is analysed using documentation analysis. This research reveals that every architectural element, in its unique manner, significantly affects the overall well-being of users of buildings. Harmony and comfort are produced by appropriately sized areas, balanced designs, and enough natural light. While lines and textures affect movement and sensory perception, thoughtful colour choice elicits feelings. Ornamentation and spatial flow are improved by rhythm. Both solitude and social connection are encouraged by the way spaces are designed. By strategically incorporating these components, buildings can encourage great user experiences and improve the physical, mental, and emotional health of users.*

Keywords: Architectural Elements, Buildings, Well-being, Comfort, Harmony

1. Introduction

The building sector has witnessed a growing interest in the health and well-being agenda, thanks to various industry-led initiatives (Manu et al., 2023). Notably, new building certification systems have emerged, specifically focusing on health and well-being. Additionally, the World Green Building Council (WGBC) has released a series of well-received reports, starting with "Health, Wellbeing and Productivity in Offices (Cheng & Li, 2023). This report gained attention for advocating that green buildings can deliver substantial benefits not only in terms of environmental and energy conservation but also by positively impacting the most significant cost for any organization and its people. The report's success led to the development of other initiatives by green building councils, such as the 'Better Places for People' campaign (Abdel-Fattah et al., 2022; Zuo & Zhao, 2014).

Informally known as 'happiness,' the concept of well-being encompasses various meanings, leading to complex and ambiguous definitions. According to Ben-Arieh et al., (2014), well-being refers to a person or community's state of being healthy, happy, and prosperous in terms of

physical, psychological, or moral welfare. It can also pertain to the good or safe condition of a thing and its ability to thrive or prosper (Peeters & van Emmerik, 2008; Taylor, 2013). Similarly, 'wellness' is considered the state of being in good health, contrasting with illness, and can include recovery from illness or injury (Levine et al., 2021; Iasiello & Van Agteren, 2020; Rapport et al., 2020). In the discourse around wellness, it is perceived as a positive state of optimal functioning in physical, mental, and spiritual health, actively pursued as a goal.

However, defining well-being has proven challenging due to its inherent complexity and intangibility. It has led to broad and ambiguous definitions of the concept (Puccio & Schwartz, 2023; Wang et al., 2023). Scholars often focus on specific dimensions or descriptions of well-being to express its nature better. (Dahl et al., 2020; Holzer et al., 2021). Given this complexity, this review refers to both descriptions and dimensions of well-being without assuming a single, universally agreed-upon definition.

The goal of this research is to get an understanding

of how these many elements, carefully incorporated into architectural design, collectively contribute to general well-being. This study aims to illuminate the complex interplay between design elements and human experiences in buildings by examining the effects of each architectural element.

The ultimate goal of this study is to provide information to urban planners, architects, designers, and legislators regarding the critical role that architectural elements have in the human experience within buildings. Professionals may design buildings that produce a good and enriching ambiance, encouraging users to thrive and lead more meaningful lives within these environments, by implementing these findings into future design procedures. By doing this, this study hopes to further the cause of human-centred design, which aspires to make buildings that are not only beautiful to look at but also promote the well-being of those who use them.

2. Methodology

In this study, a thorough research methodology was used to get a holistic understanding of the influence of architectural elements on people's well-being in buildings. This methodology employed a qualitative approach. These qualitative findings offered insightful first-person perspectives of how architectural features impacted users' feelings, comfort, and general well-being in buildings. This study made use of secondary data that was already available in scholarly literature. Examining previously published research articles, reports, case studies, and pertinent literature about how architecture affects well-being constituted the secondary data analysis. The researchers were able to validate findings and add to the body of knowledge in the field by rigorously analysing and synthesizing this vast body of previously available data.

The study's credibility was bolstered by the quality of previous research analysed using documentation analysis. This gave rise to a deeper comprehension of the intricate relationships between architectural components and well-being in buildings. The study team was able to reach relevant conclusions and provide useful

implications for developing more user-centric and well-being-focused buildings.

3. Results

3.1. Elements of Architecture

- *Scale & Proportion*

Scale in architecture refers to a building's size in relation to its environment and other objects, including the human body (de Klerk et al., 2019). For instance, consider the height of ceilings and doorways within a room concerning your own size. When observing a building from the outside, scale considers how its size compares to surrounding structures and landscaping. On the other hand, proportion focuses on the relationship between various parts of an object or building. It involves analysing how these parts relate to the whole structure.



Figure 1: A room designed with a proportion that encourages interaction and not intimidation in terms of headroom

Source: Authors' fieldwork (2023)

- *Balance*

This can be understood through the concept of symmetry, where the two halves of a building's facade mirror each other in terms of size, shape, and form placement (Azemati et al., 2020). The central axis, an imaginary vertical line down the composition, represents the implied centre of gravity. Symmetrical balance imparts a feeling of stability to a structure, while asymmetrical balance

introduces a sense of movement and dynamism by avoiding direct mirroring. Asymmetrical balance is attained by strategically balancing the visual weights of forms and spaces within the building's design.



Figure 2: A grotto demonstrating symmetrical balance

Source: Authors' fieldwork (2023)

- Light:

When analysing architecture, it is essential to consider the use of light, encompassing various types like natural, incandescent, or filtered light (Ekhaese & Solaja, 2022). Take the example of Kahn and Tyng's Yale University Art Gallery, which effectively employs track lighting to highlight specific artworks and utilizes filtered natural light through screened windows, creating a gentle ambiance inside. Light can also have distinct colours, like the stained-glass windows in a Gothic Cathedral, contributing to the overall atmosphere. Additionally, light plays a role in creating contrast on a building's facade, adding visual interest and depth to the structure's exterior (Nilam, 2023).

- Colour:

In architecture, the use of colour can evoke emotional responses from the viewer (Güneş & Olguntürk, 2020; St-Jean et al., 2022). For instance, entering a red room or encountering a building with multiple colours on its facade can elicit specific feelings. Additionally, architects consider how colour can either blend in harmoniously or contrast strikingly with the building's surroundings, further influencing the overall visual impact and ambiance (Enwin et al., 2023).

- Line:

Lines can be either physically present or

suggested. They serve to create a sense of movement and guide the viewer's gaze throughout the building's design (Mohamed & Adiloglu, 2023). Horizontal lines and arrangements generally convey a sense of tranquillity. On the other hand, vertical lines can portray height and strength, as seen in towering skyscrapers. Diagonal and curved lines, on the other hand, often evoke a feeling of dynamism and energy.

- Texture:

Texture in architecture refers to the surface characteristics of an object, determining whether it appears smooth and polished or rough and coarse (De La Fuente, 2022). There are two types of texture: tactile or haptic, which pertains to an actual surface texture that can be felt or touched, and visual or optical texture, which can be observed but not physically interacted with. Visual texture can be achieved using patterns (Ding et al., 2020; Zhu et al., 2019), while the tactile texture is evident in elements like a wooden door handle or a metal stair railing, offering a tangible experience for the user (Lees-Maffei, 2023).



Figure 3: A grotto demonstrating symmetrical balance

Source: NIA (2023)

- Ornament:

Ornament in architecture refers to the decorative elements used on a building (Abdelmegeed, 2020). These ornaments can serve functional purposes, like the gargoyle on a Gothic cathedral, or they can be purely decorative, such as the blue-green festoon on the Portland Building.

- Rhythm:

Rhythm pertains to the pattern created by the

arrangement of solids and voids in a structure (Leopold, 2021). For instance, observe the consistent rhythm formed by uniform windows on a skyscraper. Repetition of elements can also establish a rhythm that influences your perception and experience of the building. The interplay between solids and voids contributes significantly to how you perceive and engage with the structure.

- Space:

Mass and volume describe the three-dimensional aspect of space (Raper, 2020). Mass suggests density, weight, and bulk, while volume can encompass empty or enclosed spaces. Space in architecture refers to the volume of a structure and how it accommodates various elements (Ching, 2023). It's the three-dimensional area where our bodies reside, and both sculptures and buildings coexist in this space. When discussing architectural space, terms like "carving space" and "creating space" are commonly used to highlight that space is not only visually perceived but also experienced emotionally. The way space is utilized can influence our feelings in a site, and we can sense when we feel confined or surrounded by space. It is crucial to consider both interior and exterior spaces and how they shape users' experiences and interactions within them.



Figure 4: A design Studio/jury display illuminated using natural and artificial lighting to give visual

comfort and clarity

Source: Authors' fieldwork (2023)

4. Conclusion

This study highlights the significant influence each architectural element has on the general well-being of building occupants. The study reveals how architectural aspects, such as scale and proportion, balance, light, colour, line, texture, ornamentation, rhythm, and space, have a significant impact on users' experiences. Each of these factors has a special influence on the atmosphere, usability, and emotional reactions elicited by the built environment.

An environment that promotes harmony and comfort for building inhabitants is created by the appropriateness of space sizes, balanced designs, and the incorporation of plenty of natural light. By carefully influencing movement patterns and sensory perception, lines and textures help people navigate the environment and become more engaged with their surroundings. A building's design and environment are given more depth and meaning by thoughtful colour selections that provoke particular emotions.

Ornamentation gives a building its identity, while rhythm generates a dynamic spatial flow that enthralls users as they move around it. Buildings provide possibilities for introspection and meaningful interactions with others by providing well-constructed spaces for both isolation and social interaction.

In conclusion, buildings can raise user experiences to a whole new level by carefully incorporating these architectural elements, considerably enhancing the physical, mental, and emotional well-being of their users. A well-thought-out structure, with careful consideration given to each architectural component, produces a setting that uplifts, supports, and inspires the people who occupy it. This all-encompassing and user-centred approach to architectural design not only improves the built environment's quality but also develops a feeling of community and improves the general well-being of the area it serves. The results of this study give architects, designers, and legislators important information about what to consider when

designing buildings to have a beneficial impact on people's lives and encourage a healthier, happier, and more fulfilling human experience in the built environment.

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