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APPLICATION OF GESTALT PSYCHOLOGY IN SCHOOL DESIGN

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Abstract: Gestalt psychology shapes the way that individuals think and behave by focusing on the whole picture rather than individual parts. Gestalt principles of design are the foundation upon which educational environments are structured, students are interacting with each other, and perceived space is experienced. This essay examines how school architecture can be improved through the application of Gestalt principles such as closeness, resemblance, continuity, closure, figure-ground, and symmetry to enhance student participation, learning environments, and spatial orientation. Synthesizing these concepts with biophilic and sustainable design approaches, the project aims to establish models for optimizing school environments for academic success and psychological health.

Index - Gestalt psychology, school design, spatial perception, student engagement, learning environment

1. INTRODUCTION

School planning has an influence on students' behavior mental health, and ability to learn (Mehrotra & Sharma, 2020). Schools are more than just buildings; they're spaces where kids grow , and . Gestalt psychology helps us understand how people see and make sense of spaces around them. Psychologists like Max Wertheimer, Kurt Koffka, and Wolfgang Köhler came up with this idea in the early 1900s (Wertheimer, 1923). Gestalt theory says that people don't see things as separate parts, but as complete pictures (Goldstein, 2010). This idea matters a lot for school design because how students move around, interact, and learn depends on how spaces are laid out how things look, and how everything fits together (Arnheim 1974). This study aims to examine how designers use Gestalt ideas in schools and how these ideas make learning spaces better.

Sources: The Impact of School Design on Student Learning and Wellbeing, 2023 (https://www.researchgate.net/publication/383549822_The_Impact_of_School_Design_on_Student_Learning_and_Wellbeing)
Courtyard Design in Schools and Its Influence on Students' Satisfaction, 2020 (https://www.researchgate.net/publication/346249932_Courtyard_Design_in_Schools_and_its_Influence_on_Students'_Satisfaction)

2. UNDERSTANDING GESTALT PSYCHOLOGY

Gestalt psychology gives us a new way to look at how we see and make sense of the world. It says that people often group what they see and feel into patterns that mean something. The German word "Gestalt" means "form" or "shape." This points to the main idea: we don't just add up bits of info, we see the whole thing (Wertheimer, 1923). This view doesn't agree with breaking down what we see into tiny bits. Instead, it claims that how everything looks together matters more than each part by itself.

Gestalt psychology thinks our brains understand what we see and feel by putting it all together, not by looking at each piece alone. To put it : "The whole picture tells us more than just adding up its parts."

3. FORMAL DEFINITIONS OF GESTALT PSYCHOLOGY

3.1. Max Wertheimer (1912) – "There are wholes, the behavior of which is not determined by that of their individual elements, but where the part-processes are themselves determined by the intrinsic nature of the whole**."**

3.2. Kurt Koffka (1935) – "The whole is other than the sum of its parts."

3.3. Wolfgang Köhler (1947) – "Perception is not just a mechanical process of adding sensory data, but rather an active, structured process governed by innate organizing principles."

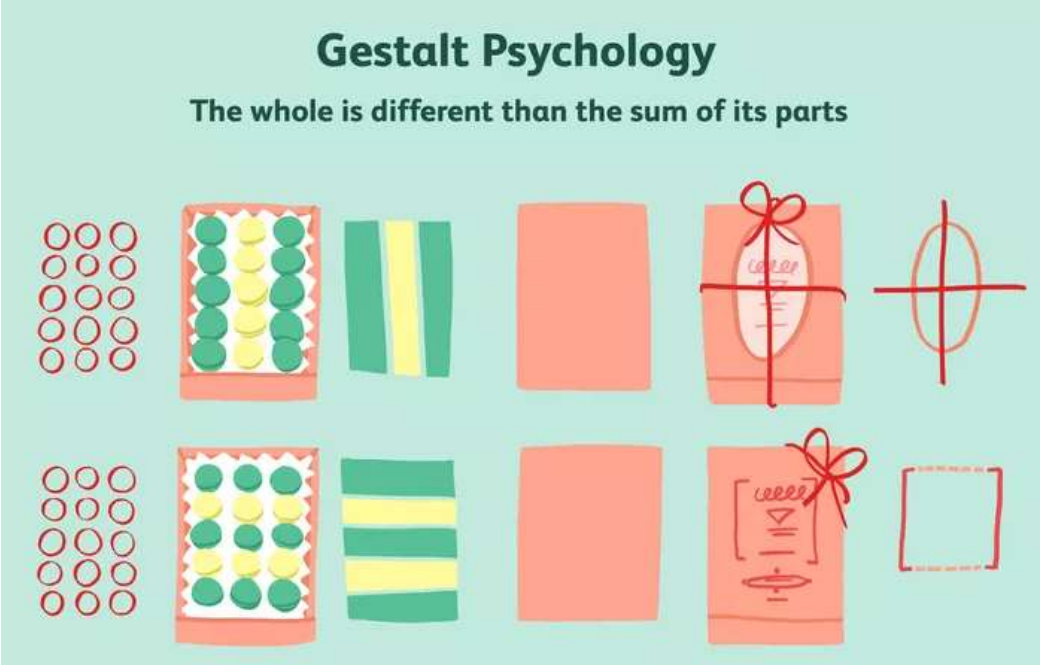

Figure 1.Gestalt Psychology (Source: Gestalt Psychology)

4. HISTORY OF GESTALT PSYCHOLOGY

One of the first major schools of psychology, gestalt psychology began in the early 20th century and was spearheaded by Max Wertheimer, Wolfgang Köhler, Kurt Koffka.
For example, the seminal research of Wertheimer on the phi phenomenon (i.e the perceived momentary movement when viewing pictures rapidly changed) established that perception is not merely stimuli passively taken in but an active cognitive process (as cited in 1912).
For Example: Humans do not observe individual frames of a film or animation, instead the mind perceives continuous motion based on how it processes visual input.
Köhler and Koffka further developed these ideas gestaltn with regard to problem solving, learning, and behavior proving that cognitive processes, instead of linear associations, exist based on inherent pattern of organization (Koffka, 1935; Köhler, 1947).

Timeline of Gestalt Psychology Development

Year	Event
1910	Pioneering study of phi phenomenon ~ Max Wertheimer — motion perception is not just the accumulation of single images but a perceptual entire experience as described by him. This was the background for Gestalt psychology.
1912	Wertheimer, theoretical founder of Gestalt Psychology published his seminal paper "Experimental Studies in the Percepts of Motion"
1913	Wolfgang Köhler took up his studies in the field of problem-solving of apes aka insight learning and decades later demonstrated that learning does not just happen through trial and error but can be achieved by the perception of relations.
1915-1917	Kurt Koffka — expanded Gestalt principles to include perception and development, proposing a hypothesis of perception as an organized,interactive process.

1920s	Proximity, similarity, closure, continuity and figure-ground relationships were the at the time named Gestalt principles for how humans perceive and order visual stimulus.
1925	Koffka further expanded Gestalt principles to child development with publication of his book "The Growth of the Mind"
1935	Köhler „The Mentality of Apes“ was journey into insight learning meaning that solving the problem happens by sudden realization not only gradual learning but he published first paper.
1938	Wertheimer, in his publication called „Productive Thinking“ described the role of Gestalt principles in solving problems and educating.
1940s-1950s	Influence on the Cognitive Psychology, chief and foremost within Perceptual Systems (stimulus response) and such what we now call in later educational models as learning theories
1960s	Gestalt principle in design led to the assimilation of graphic design, architecture and human-computer interaction.
Present	Gestalt psychology still pervades other fields including cognitive psychology, neuroscience, UI/UX design and education.

Table 1. Timeline of Gestalt Psychology

5. Influential Gestalt Psychologists

The phi phenomenon was observed by Wertheimer, and the development to Gestalt psychology is seen to have started from his observations which then later outed the basics of this field of study. There were also other psychologists who contributed to this school of psychology.
He was influenced by other psychologists as well.5
Gestalt psychology was attributed to whose observations of the phi phenomenon, and afterwards he began to spread about some of the fundamental issues in the field Wolfgang Köhler: Köhler philosophized the natural sciences into Gestalt psychology by exemplifying organic phenomena as holist ones.
He was interested in hearing and did experiments on problem-solving in chimpanzees.
Kurt Koffka: along with Wertheimer and Köhler all considered an originator of our field He contextualized the notion of Gestalt inside child psychology, since young children take in things whole initially and form simple distinctions afterwards.
Gestalt principles played a vital part in Koffka's move to the U.S. Gestalt Psychology

6. Gestalt’s Principles

The principles of Gestalt, the Laws of Perception were formulated by Wertheimer in his treatise published in 1923 and subsequently worked at by Köhler, Koffka & Metzger.
The principles derive from one of the fundamental human nature tendencies that seeks order when there is apparent disorder, a process that occurs in brain not in sensory organs like eyes. The mind “puts meaning” into figures the observer sees as he caught by eyes obey the same laws, as Wertheimer said.
These principles allow the brain to process uniform forms rather than just collections of individual unconnected images.
Though these principles work by design they are, of course, the mental shortcuts used in interpreting information. They are shortcuts and hence make incorrect decisions–often the reason that we perceive incorrectly.

6.1. Similarity

- This law suggests that we tend to group shapes, objects or design elements that share some similarity in terms of color, shape, orientation, texture or size.

6.2. Proximity

- ‘Law of Proximity’ : Things near to each other tend to be seen in our minds as cluster or shapes, objects or design elements that are close to one other.
- Opposing it, in a random spacing items generally appear isolated.
- Directing attention to the important elements in a design: the more similar in visual position elements are, the more closely linked people will perceive them to be; and too much negative space will help to isolate the arragement from one another.

6.3. Common Region

- This law states that objects within the same closed region— whether it be inside a closed circle or shape—are assumed to be elements of the same group.
- Those crisp edges of an inside and outside in any shape are do much for the elements which in turn can even negate law Proximity or of Similarity.

6.4. Continuity

•This legislation contends that figures, forms or design elements arranged in such a manner that implies lines, curves or planes will

be seen as such, rather than as isolated elements.
•We perceptually group the elements together to create a continuous picture

6.5. Closure

•This legislation postulates that the human mind tends by nature to complete gaps visually when perceiving forms, especially to recognize familiar pictures.
•When missing information is provided, our attention turns to the information that does exist and invariably "fills" in the gaps with known lines, colors or patterns.
•When a form has been identified, even though additional gaps have been added, we still perceptually complete the form, so that they remain stable.
•IBM's iconic logo is just one instance of applied closure – blue horizontal strokes are stacked three high that we "close" to create the letterforms (Graham 2008).

https://www.simplypsychology.org/what-is-gestalt-psychology.html

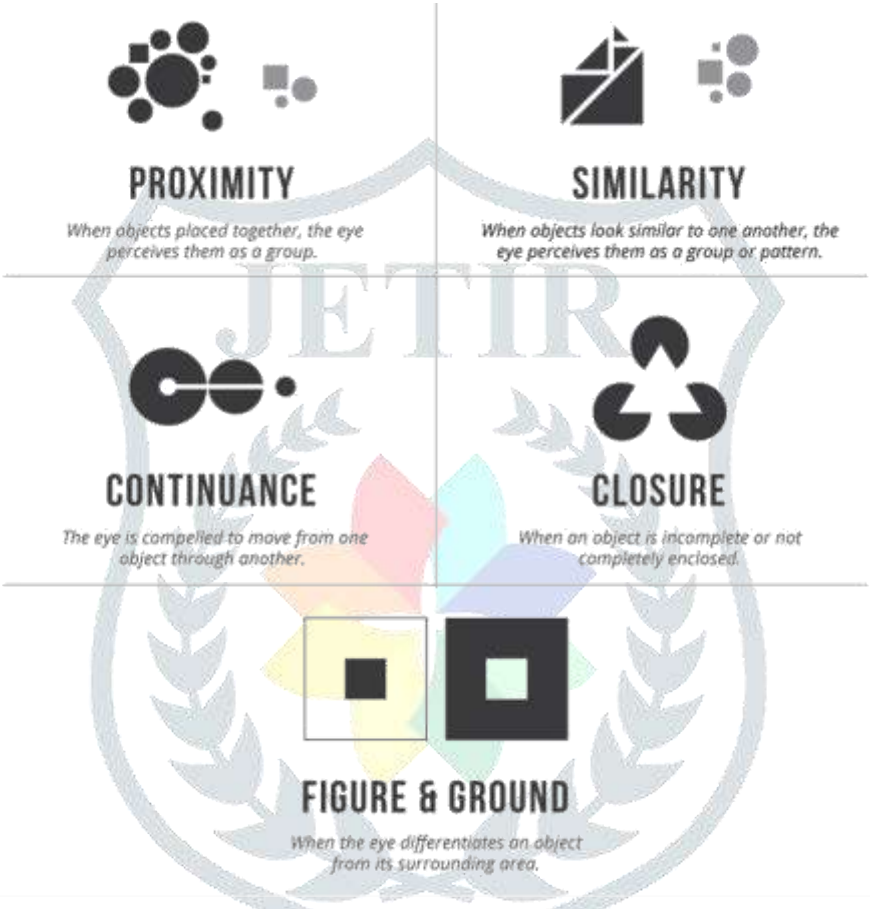

Figure 2. Principles of Gestalt Psychology

(Source: https://www.simplypsychology.org/what-is-gestalt-psychology.html)

7. Gestalt Psychology in Design

Gestalt thinking is an important part of Layout because it affects how people see and engage with places elements and visual setups. founded on the mind that the man head get radical items into significant forms gestalt ideas cast however Layouters get stable beautiful and easy-to-use Layouts that bid amp right exploiter Encounter

7.1. Importance of Gestalt Psychology in Design

Gestalt psychology helps designers:
•make optic rate break away organizing inside information well
• get it easier to employ away devising it simpler to look and touch
• get good plant away put elements collectively founded along obtuse view ways
• get feelings and Althoughts stronger away dynamic however Operators look and feel

8. Application of Gestalt Principles in School Design

Applying Gestalt principles to school Structure ensures that spaces are Layouted to Improve perception cognition and behaviour thereby fostering student engagement psychological comfort and better learning Encounters.

The courtyard, which was frequently encircled by rooms on all four sides, served as the central component of residential buildings in ancient Mesopotamian, Egyptian, Greco-Roman, and Indus Valley civilizations. This typology's climatic benefit was particularly noticeable in hot, dry areas, where courtyards offered natural ventilation, shaded open space, and a way to cool down indoor temperatures (Salama, 2015). Courtyards were essential to privacy and thermal comfort in medieval Islamic architecture, especially in residences, madrasas, and mosques. The courtyard provided natural light, ventilation, and a calm area for contemplation, while the inward-facing architecture adhered to social conventions (Reynolds, 2002).

Aspect	Gestalt Influence	Example in School Design
Spatial Organization	Users perceive spaces holistically	Open courtyards improve connectivity and collaboration
Visual Hierarchy	Guides attention using contrast & grouping	Entry points and circulation pathways are emphasized
User Interaction	Enhance intuitive navigation	Signage and colors distinguish learning zones
Material & Texture	Unifies spaces through pattern repetition	Wooden textures create warmth and harmony in interiors

Table 2. Gestalt Psychology in Architectural Design

8.1. Figure-Ground Perception in Learning Spaces

Definition: Figure-ground perception helps individuals distinguish between an object (figure) and its background (ground).

Application:
• Clear spatial zoning in classrooms where teaching spaces (figures) stand out against background elements such as walls and furniture Improves visual clarity and focus (Mohan 2021).
• Use of contrasting colours textures and lighting to define spaces (e.g. light down edition corners in libraries)

Source: Mohan, R. (2021). Visual Perception in Learning Environments: A Gestalt Approach. Journal of Architectural Research, 14(2), 67-82.

8.2. Proximity and Grouping for Classroom Layouts

Definition: Objects placed close together are perceived as related.
Application:
• Group seating arrangements in classrooms help make collaborative learning zones.
• Clustered desks foster peer interaction and teamwork (Fisher 2005).
• Separate but adjacent reading nooks and art stations help reduce distractions while maintaining a sense of connection.

Source: Fisher, K. (2005). Research into Identifying Effective Learning Environments. Learning Spaces Journal, 3(1), 22-36.

8.3. Similarity in Material and Spatial Coherence

Definition: Similar elements are perceived as part of the same group.
Application:
• Consistency in furniture Laying out colors and textures across different classrooms provides a sense of order and predictability, reducing cognitive load.
• Repetitive layouts in flooring, wall graphics, and ceiling layouts guide visual attention and help students navigate spaces intuitively.

Source: Smith, A. & Green, T. (2019). Cognitive Load and Architectural Perception in Schools: A Gestalt Perspective. Journal of Educational Design, 6(4), 112-130.

8.4. Continuity in Circulation and Wayfinding

Definition: The head perceives perpetual lines and layout levels once they are interrupted.

Application:
• Wayfinding strategies in schools need to admit perpetual optic cues such as arsenic, perpetual floor layouts, guidance railings, or aerial beams up from catch to classrooms (Rashid & Zimring, 2008).
• A hallway plan with perpetual optic markers helps students with spatial storage and navigation.
• Curved pathways and natural dissemination routes raise mobile drive and cut congestion.
Source: Rashid, M. & Zimring, C. (2008). Continuity in Spatial Organization and Learning Outcomes. Journal of Educational Architecture, 12(3), 45-61.

8.5. Closure in Learning Environments

Definition: The brain tends to fill in missing information to perceive a complete shape.
Application:
• Open shelving units, modular learning walls, and half-height partitions Foster visual continuity while maintaining a sense of enclosure (Herman Miller 2016).
• Semi-open courtyard Layouts with tree canopies forming natural enclosures Make psychologically comfortable outdoor learning zones.
Source: Herman Miller. (2016). How Spatial Perception Affects Learning. Educational Design Journal, 9(1), 28-42.

8.6. Symmetry and Balance for Psychological Comfort

Definition: Symmetrical environments evoke a sense of stability and order.
Application:
Balanced classroom layouts with equal distribution of desks, lighting, and open space reduce visual clutter and promote calmness (Ching 2014).
Courtyard-centric school Layouts with symmetrical landscaping Improve student well-being and provide a harmonious learning environment.
Source: Ching, F. Cardinal K. (2014). Structure: Form Space and Order. Wiley & Sons

8.7. Good Form and Minimalism in School Layout

• Minimalist school Structure reduces cognitive overload, allowing students to focus better.
• Open-plan classrooms with decluttered spaces Foster flexibility and adjustability in learning.
• A monolithic, well-structured facade with limited distractions Improves visual stability and learning focus.

Source: Norman, D. (2013). The Design of Everyday Things. MIT Press.

9. Psychological and Cognitive Impact of Gestalt-based School Design

9.1. Enhancing acquisition and store retention

Gestalt-based settings make it easier to recognize layouts, which improves store memory and cognitive method (Wertheimer 1923). Students learn better in classrooms that use visual continuity and well-organized layouts (Mehrotra & Sharma 2020).

9.2. Reduction of cognitive charge and stress

An air that is visually disorganized and compact with dwell increases cognitive charge, which causes focus and beguilement (Gibson 1979). A well-organized, peaceful environment that promotes mental health is ensured when Gestalt concepts are applied.

9.3. Up gregarious fundamental interaction and engagement

well-laid-out gregarious areas and seat configurations that are end-to-end and different further match touch, which is important for gregarious and cathartic increase (Singh & Srivastava 2019).

10. Conclusion & Recommendations

Gestalt psychology provides a robust foundation for laying out intuitive and engaging school environments. away integration of its principles with sustainable and child-centric plan approaches, architects get to make schools that raise both acquisition and welfare. Future research could explore empirical studies on student effectiveness in Gestalt-based learning environments.

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