

Neuroscience Research of Design Features in Learning Space

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I. EXTENDED ABSTRACT

Today, with ever-growing amount of data from all different types of research available, the field of Architecture is changing in response to the demand for solutions that have meaningful effects on occupants. There are opportunities to utilize and apply data from other fields, such as behavioral and cognitive psychology in a design process. This project strives to understand how neuroscience research can inform the design process in the future, especially in learning spaces, with the attempt to answer the following questions:

- What are the possible environmental features in learning spaces that can help inform the design process, and what types of neuroscience data can be analyzed and applied?
- How will the design process in the field of architecture change as we gain access to information on those features through neuroscience research?

In the analysis, various physical elements in a classroom setting were identified. For each element, existing studies were documented, as well as potential behavioral, cognitive or neurological studies that can be used to inform the design process.

This project was presented at the Miller Gallery at Carnegie Mellon University. At the exhibit, two stations were set up for the users to experience being in a classroom setting from a child's point of view. Each station was equipped with the photo panels and audio files that were retrieved from the Children's school at Carnegie Mellon University to provide a dynamic and enhanced experience.

Use of data in design opens a wide range of questions that make us wonder about the future of design. Discussions about this project at the Miller gallery included interesting future ideas, such as the possibility of incorporating the data in the design softwares such as the existing 3D modeling programs (Revit, Rhino, etc.). Below are some questions that might lead to interesting speculations about using data in design process in the future.

- What will happen to the users when every space is programmed for our brain and body to react a certain way?
- What will happen to the field of architecture as we discover how each of the spatial qualities affects our emotions, thoughts, performance, and actions?
- How will our brains change in response to the change in technology?
- What if we knew exactly what about a space was affecting our thoughts and actions?
- What if the building responded to our feelings or needs in real-time?
- What if we could track a person's state of health, to which the spaces responded in real-time?
- What will happen to the users when every space has an expected goal?

It is already established through organizations such as ANFA, that there is a growing interest in using neuroscience data in architecture. With the technology today, the desired knowledge in neuroscience is obtainable, and the research is accessible. However, it is important to imagine how we will apply the knowledge and research into design process. As more possibilities are explored and developed, it will facilitate the communication and translation of the data use to the practical use in architecture.

2. REFERENCES

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3. AUTHOR BIO

The author graduated from Carnegie Mellon University with a dual degree in Architecture and Psychology. As an undergraduate, she has worked with both architecture and cognitive neuroscience faculty to explore ways that design decisions can be informed by neurological and physiological data. She currently works at an architecture firm, Gensler, as an analyst and researcher to apply behavior and spatial research to inform evidence-based design process.