

LEGO MODEL LAYOUT PLAN TOOL KIT EXPLORATION FOR STUDIO-BASED LEARNING

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Highlights: The online learning will cause the design-based education courses such as Interior Architecture, having hard time for its first-year students to really understand the design disciplinary by studying just through the 2D visualize layout without having proper physical 3Ds study materials to fully experiencing the space. Therefore, through this teaching innovation 'Lego Model Layout Plan Tool Kit' it was found out that it can enhance towards the students fun playful learning experience, interpretation of scale and space. It's allowed the students fast recognition regarding proper scaling and provided more degrees of freedom to design the space.

Key words: *Lego Model, Layout Plan Tool Kit, Playful Learning, Interior Architecture*

Introduction

Design based education is well known for its face-to-face physical teaching activities. It allows the students to physical interact with the space to explore and experience its contents. However, due to pandemic response and the changes of teaching method to online learning, it causes problems for the first-year students to perceive. Students seem to have hard time to understand regarding scaling and space. Therefore, this paper would like to propose an alternative way of teaching innovation which can enhance the student's learning experience, exploration, and proportion.

The 'Lego Model Layout Plan Tool Kit' which come in packed small modular block pieces regard to the template items, and scale selection act as Lego allow freedom to the students to play and explore the design with proper guidance towards scale and proportion. Students physically can have fun planning their idea first using the Lego block before finalizing the design on drawings.

This playful learning physical Lego created in eco-friendly plastic materials offers features to extend the online students learning scenarios. Using interlock system, colour coding block, and proper scale printed pattern, it will require student's logical reasoning capability to overcome the obstacle (the Lego) in order to complete the design. For instant, "finding a suitable information scale" will require students to know the background of situation and reasoning it with the hints in order to solve the design (Atmatzidou, et al., 2008; Legény & Teixeira 2019).

Every 'Lego Model Layout Plan Tool Kit' sets come with guidelines on how to design or play with them which can be seen as boxes packed with interesting/useful pieces.

By looking at the playing games at metaphorical or system levels, playful learning environment shows some important insights for the development of students design supporting system (Hill, et al., 2003; Whitton, 2018; Melero, et al., 2013).

Problem Statement

The idea came out due to data response done towards the first-year students in Interior Architecture Department in the Faculty of Architecture and Ekistics, Universiti Malaysia Kelantan that based on their opinions towards their online learning experience where majority of them had difficulty to understand the design scale in studio projects. Most of them cannot visualize the dimension in space correctly.

The physical teaching method is important as an early education in the development of student's basic understanding. In this study, it is believed that first-year students face problems in capturing the lessons because they require a more effective delivery medium or tool to ensure effective result, especially in mastering basic scale and proportion related learning.

Novelty And Inventiveness

Practically it coincides with enhancing the online learning process through physical Lego-solving design process with the aim of playful learning, by using the 'playing' characteristics to amplify and explore the learning process, furthermore the design process (Rice, 2009). Benefits derived from this type of activities are related to developing exploration skills and cooperation.

The physical teaching method is important as an early education in the development of student's basic understanding. By implementing the Lego playful learning environment, it can engage students in the subject topics, while at the same time foster students' problem solving, analytical and memory skills.

Creating a more physical playful immersive learning experience for students by bridging the physical and digital resources.

Product Description

Applying physical playful learning experience 'Lego Model Layout Plan Tool Kit' in the delivery of basic understanding on scale and design as a way to teach early design-based students. This teaching innovation highlighted the requirement of incorporating mechanisms that promote problem solving and students' motivation.

Commercialization

As bridging physical and digital learning resources this physical playful learning 'Lego Model Layout Plan Tool Kit' features to extend the online students learning scenarios which involved fun physical interaction activities. Furthermore, playful learning experience also can increase student knowledge understanding performance.

Advantages

Students can have fun in exploring space planning design with proper scaling by playing the 'Lego Model Layout Plan Tool Kit' contents with easy guidance which enhance their learning environment experience.

The interactive Lego block kit design creates a sense of fun and easy to use that can give students motivation to explore as well as to create the best outcome design.

The physical interaction learning process assist the early students who have difficulties in the visualization process through hand-on que model.

Publication

Seem that this teaching innovation 'Lego Model Layout Plan Tool Kit' is quite new, there were none publishing done yet. However, they will soon in the future.

Funded

Same as above, new application of funded grant will soon be applied for further promoting the innovation.

Intellectual Property

Currently the innovation has not yet been registered. However, application for copy right has been applied.

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References

- Hill, J. M., Ray, C. K., Blair, J. R., & Carver Jr, C. A. (2003). Puzzles And Games: Addressing Different Learning Styles In Teaching Operating Systems Concepts. In Proceedings Of The 34th SIGCSE Technical Symposium On Computer Science Education (Pp. 182-186).
- Atmatzidou, S., Markelis, I., & Demetriadis, S. (2008). The Use Of LEGO Mindstorms In Elementary And Secondary Education: Game As A Way Of Triggering Learning. In International Conference Of Simulation, Modeling And Programming For Autonomous Robots (SIMPAN). Venice, Italy (Pp. 22-30).
- Rice, L. (2009). Playful Learning. *Journal For Education In The Built Environment*, 4(2), 94-108.
- Melero, J., Santos, P., Hernández-Leo, D., & Blat, J. (2013). Puzzle-Based Games As A Metaphor For Designing In Situ Learning Activities.
- Whitton, N. (2018). Playful Learning: Tools, Techniques, And Tactics. *Research In Learning Technology*, 26.
- Legény, J. & Teixeira, A. G. (2019). Lego® Set As A Tool: Enhancing Creativity In Architecture, Urban Planning And Design