



# Global Journal on Humanities & Social Sciences



Issue 1 (2015) 63-66

Selected Paper of 3rd World Conference On Design, Arts and Education, (DAE-2014)  
02-03 May 2014, Royal Princess Hotel Conference Center in Dubrovnik, Croatia.

## Design studio project complexity and students' perceptions of their creativity

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### Suggested Citation:

Oluwatayo, A., Opoko, P., Ezema, I., Alagbe, O., Adeboye, A. & Fulani, O. (2015). Design studio project complexity and students' perceptions of their creativity, *Global Journal on Humanities & Social Sciences*. [Online]. 01, pp 63-66. Available from: <http://www.world-education-center.org/index.php/pntsbs>

Received January 15, 2014, revised March 01, 2014, accepted March 19, 2014.

Selection and peer review under responsibility of Prof. Dr. Siniša Opić, Zagreb University, Croatia

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### Abstract

The quality of design that architecture students produce has often been attributed to the complexity of the design project, sometimes referred to as "how challenging the project is". In this study, an attempt is made to test this assumption, using a sample of students in the Department of Architecture, Covenant University. The data obtained were analysed using regression analysis. The results of the study confirm the assumption and identify the aspects of complexity that resulted in perceived higher creativity of the students. Recommendations were made in line with the findings of the study.

Keywords: architecture, creativity, design studio, project complexity.

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## 1. Introduction

Creativity is an essential aspect in design, particularly architectural design. This is because the architect is often faced with challenges that require him to use the knowledge already acquired to solve new problems. The validity of self-perceived creativity as a measure of creativity has been contested in literature. The argument has been largely because creativity is domain specific and the use of self-perceived creativity is more applicable for design rather than for pure arts, as well is in the context of a particular creativity problem (Kreitler & Casakin, 2006). Researchers Casakin and Kreitler (2011) suggested that the meaning an individual attaches to a design problem would determine the creativity displayed in a design project. This probably suggests that the perceived complexity of a design project may be related to the creativity displayed by an individual. This may be particularly so in the context of architecture, where creativity may sometimes vary with the project. However, there is little study on the relationship between self-perceived creativity and perceived project complexity. This study builds on the work of Kreitler and Casakin (2006) in investigating the relationship(s) between perceived students' project complexity and creativity. A study of this nature is important because it would reveal aspects of design complexity that spur higher creativity.

## 2. Literature Review

Creativity as defined by Zampetakis, Bouranta, and Moustakis (2010) is the production of ideas, products, and procedures that are novel and potentially useful of practical. Other researchers Sarkar and Chakrabarti (2011) also agreed on this definition. Casakin and Kreitler (2011) identified four aspects of creativity, which are, fluency, elaboration, flexibility and originality. Creativity is said to depend on the content of the problem dealt with (Casakin & Kreitler, 2011). This follows from the evidence from literature that creativity is domain-specific.

Various approaches have been adopted by researchers in measuring creativity (Batey, 2012). These include divergent thinking tests, attitude and interest inventories, and rating by peers, teachers and supervisors. Other approaches are ratings of eminence, biographical inventories, judgment of product, self-reported creative activities, and personality inventories. Researchers have also assessed various aspects of creativity. These include the person, the process, the press, and the product. While a focus on the person entails the investigation of the characteristics of the person(s) being investigated, a focus on the process involves an investigation of the means by which creativity is achieved. A focus on the press is an investigation of the environment in which creativity is produced, while with the product focus, the creativity of the product is assessed. For each focus of investigation, creativity measurement may be objective or subjective, depending on how and who carries out the creativity measurement. The object of this study is the creative person. An objective measurement of the creative person is often carried out by the divergent thinking test, while the subjective measurement is either carried out using self- or expert-rated measurements. One subjective measure of creativity is the self-perceived creativity measure developed by Kreitler and Casakin (2006), which has 33 questions.

Design, according to Casakin and Kreitler (2011) requires unconventional use of knowledge. In investigating the creativity displayed in solving a design problem. The process of achieving creativity may however be best described by the creative person. This is in the light of the fact that Casakin and Kreitler (2011) observed that the creative solution proposed in a design depends on the way the creative person perceives the problem. In other words, it may be important to look at the meaning attached to the design problem (Casakin & Kreitler, 2011). This approach measures the attitudes and interest of the students in solving the design problem. It is described as the meaning profile of creativity. This approach, aside from revealing the underlying organization of acts involved in the creative process also reveals how the act is performed. With this approach, the meaning profile of the individual is compared with the meaning profile of the act. Creativity has been investigated successfully using the meaning profile. An aspect of the meaning profile is the perceived complexity of

the project. Although there are indications that the perceived complexity of a project would determine the creativity displayed, very little is known about the relationship between design project complexity and architecture students' creativity. This study therefore attempts to explore latent relationships.

### 3. Research Methods

Data was collected from 19 students in the sixth year in the Department of Architecture in Covenant University. The design problem was a mixed-use building in a sloppy site by a stream. The students were to make use of the site features in designing the variety of spaces required. The cross-sectional survey was carried out using questionnaires, which sought to elicit information on the perceived complexity of the last design studio projects of the students as well as their rating of the creativity they displayed. The creativity rating was compared with the scores they were given by jurors on creativity. The questions on creativity, used in the study of Kreitler and Casakin (2006) were used. A five point Likert scale was used in obtaining responses for creativity statements.

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### 4. Findings and Discussions

The results show that 15 of the students were male while 4 were female. Out of this number, 14 were aged between 21 and 23. A factor analysis of the 33 questions was first carried out. The results show that seven factors accounted for 75.8 percent of the variance in the data. The first factor was the freedom inherent in the design project, which accounted for 14.4% of the variance in the data, while the second was applicability of the project, accounting for 11.8% of the variance in the data. Other factors, which describe the process of creativity, were context clarity, constraints, clear requirements, task difficulty and flexibility, which accounted for 11.7%, 10.3%, 9.6%, 9.0% and 8.9% of the variance in the data respectively. This suggests that the students mostly described their design projects in terms of the design freedom they have, followed by the obvious or implied applicability of the project. This result is similar to that of Kreitler and Casakin (2006) who found that students rated usefulness and functionality highest.

The regression analysis carried out showed that only the perception of applicability determined the perceived creativity of the students in the specific design project. The results (Table 1) show that only the perceived applicability of the project negatively influenced the self-assessed creativity of the students (Adjusted R<sup>2</sup>= 0.17, F= 1.53, p<0.05). What this suggests is that a student who has little idea about how a project would function may be more likely to think outside the box, expressing ideas that may turn out to be innovative. This probably suggests that the more realistic the architecture students in the study perceive a project, the less creative they may be. This may sound paradoxical as architecture proffers design solutions to real life projects. One would however note that creativity might sometimes be synonymous with creation of new forms or application of unconventional forms. In this sense, trying to fit a project to known forms may limit creativity. Further studies may find the relationship(s) between aptitude at use of forms and ensuing creativity. Another explanation to this finding may be that when there is the possibility of the realization of a project, the architect needs a proper understanding of how proposed forms can be actualized. The fact that the possibility of actualization of the project limited the creativity of the students probably poses the question of how equipped the students were to understand use of materials and other structural issues. It would also

be noted that there is a general belief amongst architecture lecturer that design constraints would spur design creativity. The students do not seem to agree with this.

Table 1. Results of the regression analysis of students' perception of complexity of design project on the creativity of the students.

Model	Coefficients				t	Sig.
	Unstandardized Coefficients		Standardized	Beta		
	B	Std. Error	Coefficients			
(Constant)	4.167	.126			33.190	.000
freedom inherent in the design process	.071	.129	.119		.553	.591
perceived applicability of project context clarity	-.343	.129	-.571		-2.659	.022
design constraints	.152	.129	.254		1.182	.262
clear requirements	.096	.129	.160		.745	.472
task difficulty	.041	.129	.068		.319	.756
flexibility of the design process	.143	.129	.238		1.110	.291
	.027	.129	.046		.213	.835

## 5. Conclusion

The study set out to investigate how the perceptions of project complexity influence the design creativity of architecture students. The results show that perceived applicability of the design project hindered the creativity of the students. This may suggest that the more hypothetical a project is the more creative the students may be. This however needs to be empirically tested with different categories of projects. As earlier noted, further studies may investigate the relationship between form aptitude and creativity. This study was just a pilot study and is limited by both the sample size and frame. In addition, perceived creativity was based on only one design project. Future studies may expand the scope for generalization of results.

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