

The Correlation of Self-Regulated Learning and Creative Self-Efficacy among Architecture College-Students

Annida Anastiani*, Stephanie Yuanita Indrasari

Faculty of Psychology, University of Indonesia, Depok City, 16424, Indonesia

*E-mail: annida.anastiani@gmail.com

Abstract

Creative self-efficacy (CSE) is viewed as the most appropriate concept to explain the motivation behind creative expression that is defined as an individual's state-like belief in his or her own ability to perform specific tasks required to produce novel, original, or appropriate solutions (Abbot, 2010). This self-efficacy is needed for architecture college-students as one of the fundamental aspects in facing competitions in the architecture field. However, there are still few studies of CSE in the field of architecture. Previous research has found that design self-efficacy among architects (Beefink, et al., 2012) and student creativity (Jalou, 2015) are influenced by self-regulated learning. Therefore, the current study aimed to examine the correlation between self-regulated learning (SRL) and creative self-efficacy (CSE) among architecture college-students. SRL was measured by using Strategy of Self-Regulated Learning Scale (Hariseno, 2012), CSE was measured by using Revised Model of CTSE II and CPSE II (Abbott, 2010). Using accidental sampling technique, participants of this study were 159 architecture college-students (Boys = 55). The Pearson Correlation indicated that SRL correlates positively and significantly with CSE ($r = 0.321$; $p < 0.01$) and as well as each dimension, creative thinking self-efficacy ($r = 0.269$; $p < 0.01$) and creative performance self-efficacy ($r = 0.342$; $p < 0.01$), among architecture college-students. Based on these results, it is suggested that architecture college-students should improve their self-regulated learning in learning process because the higher self-regulated learning architecture college-students, the higher creative self-efficacy.

Keywords— architecture college student; creative self-efficacy; self-regulated learning

1. Introduction

Indonesia as a developing country is conducting large-scale infrastructure development. This has implications for the increase of national construction market. Consequently, it is increasing the competition among architects in making efficient and effective building design in accordance with the availability of land, but still meet a variety of demand. Competition that is faced by Indonesian architects are increasingly stringent since the enactment of the ASEAN Economic Community (AEC) in 2015 (*Kementerian Pariwisata dan Ekonomi Kreatif Indonesia* [Kemenparekraf], 2014). Following this implementation, the competition among Indonesian and international architects, especially from ASEAN countries, is increases. This requires a high level of creativity from Indonesian architects to survive in the competitive world of work of architecture. In relation to a prospective architect or architecture college-students, it can be concluded that they are expected to have high

creativity when entering the real work as a architect in order to survive the competition in the real world of architecture. Therefore, it is important for architecture college-students to start developing their creativity since in college.

Creativity level of individual is not only seen from the talent and the results of creative expression, but also viewed from how their motivation to express their creativity (Guilford, 1950, in Abbot, 2010). Creative self-efficacy (CSE) is viewed as the most appropriate concept to explain the motivation of someone in creative expression (Abbot, 2010). Abbott (2010) defined CSE as an individual's state-like belief in his or her own ability to perform the specific tasks required to produce novel, original, or appropriate solutions. According to this finding and in relation to architecture college-students, it can be concluded that by measuring their CSE, it will give a picture about architectural college-students' belief in their ability to express creativity in doing assignment or making product.

Abbot (2010) defined CSE based on previous theories about self-efficacy from Bandura (2007) and also creativity from Guilford (1950) and Csikszentmalyi (1996). Self-efficacy refers to a person's state-like belief in his or her own ability to actually perform specific tasks to achieve some objective given even if obstacles may exist (Bandura, 2007, in Abbot, 2010). According to Guilford (1950, in Abbot, 2010), creativity refers to a stable trait that enables the production of novel, original, and appropriate solutions. Abbot (2010) divided CSE into two dimensions based on Csikszentmalyi (1996), namely creative thinking self-efficacy (CTSE) and creative performance self-efficacy (CPSE). Dimension of CTSE is an individual's belief in his or her own ability to express creative thinking. CTSE is indicated with four latent factors (i.e. fluency, flexibility, elaboration, and originality). Dimension of CPSE is an individual's belief in his or her own ability to express creative performance. CPSE is indicated with three latent factors (i.e. domain, field and personality).

Self-regulation on learning process in psychology is named as self-regulated learning (SRL). SRL is defined as the degree to which students are metacognitively, motivationally, and behaviorally active participants in their own learning process (Zimmerman, 2008). According to Zimmerman (1990), students who use SRL in the learning process or referred to self-regulated learners are characterized as students who are aware of what they know and do not know about fact or processes of skills, not passive in class, looking for information proactively when in need, taking important steps to master the material, trying to find ways to succeed despite the obstacles (Zimmerman, 1990).

Previous studies have examined the role of self-regulation among architectures (Beefink, et al., 2012) and on student's creativity (Jalou, 2015). Designers will perform better when they have the tendency to regulate their design activities (Beefink, et al., 2012). However, it needs a high level of self-efficacy as a moderator to relate self-regulation with perceived design success because managing and controlling processes lead to the perception of being in control (Bandura, 1991, in Beefink, et al., 2012). Beefink, et al. (2012) found that design self-efficacy mediates the relationship between self-regulation and perceived design success among architects. According to research by Jalaou (2015), there was significant relationship between self-regulation learning strategies and student's creativity. This research was conducted based on previous literature and research that said self-regulation is one of the most effective task motivation components to affect creativity (Amabile, 1996; Pinterich & Shank, 2002, in Jalaou 2015). Moreover, Zimpetakis (2010) conducted a research which revealed that a person who has high self-perceived creativity has a good time management skills (i.e. daily planning, long-range planning) as their self-regulation strategy.

Architectural education from around the world, including in Indonesia, give attention about student creativity by promoting design studio class (Ibrahim and Urtaberta, 2012; Utami, 2009, and Wolff, 2009). The design studio

class is viewed as a good model to increase student creativity in learning process (Boyer & Mitgang, in Wolff, 2009) and as the most potential learning method for managing student's ability in solving problems with high creative sensibility (Schon, in Wolff, 2009). Moreover, according to Ibrahim and Urtaberta (2012), design studio is a course in architectural education that aims to provide the skills and knowledge required by students to produce an innovative, creative, and competent design solution. Therefore, it is assumed that CSE of architecture college-students can be developed through design studio class.

Based on literatures, previous studies, and phenomena on architecture college-students, this study tried to examine the relationship between self-regulated learning and creative self-efficacy among architecture college-students. The research question of this study is: "is there a relationship between self-regulated learning and creative self-efficacy among architecture college-students?" And the hypothesis is: "there is a significant relationship between self-regulated learning and creative self-efficacy among architecture college-students"

2. Methods

Participants in this study were 159 undergraduate architecture students who already passed the design studio class. This study used a non-randomized sampling technique with the type of accidental sampling (Kumar, 2005). This was an applied, correlational, and quantitative study (Kumar, 2005). Furthermore, design of this study was non-experimental retrospective cross-sectional study (Kumar, 2005).

Self-regulated learning was measured by Self-Regulated Learning Strategy Instrument by Hariseno (2012) that refers to the 14 categories of self-regulated learning strategy proposed by Zimmerman (2008). This instrument is written in Bahasa, consists of 25 items, and uses the 6-Likert scales format ("Strongly Not Agree" to "Strongly Agree"). From try-out stage in this study, this instrument was found to be not reliable, alpha coefficient = 0.64, (Kaplan and Saccuzzo, 2009). To increase the alpha coefficient, 7 bad items were deleted. Increasing score of alpha coefficient with 18 items was 0.77 (reliable) (Kaplan and Saccuzzo, 2009).

Creative self-efficacy was measured by the Revised Model of the CTSE II and CPSE II Inventories developed by Abbott (2010). This instrument consists of 21 items, 12 items measuring the CTSE dimension and 9 items measuring the CPSE dimension. From his research, Abbot (2010) found that CSE is a multiple dimension. This instrument was adapted both in language and content, and also changed in term of the format of response to the answers into 6-Likert scales ("Strongly Not Sure" to "Strongly Sure"). In this study, it was discovered that the value of alpha coefficient (reliability) was 0.80 on the dimensions of self-efficacy creative thinking and 0.76 for creative performance self-efficacy.

The data was analyzed using Pearson Correlation statistical technique to examine the relationship between self-regulated learning, creative self-efficacy and as well as each dimension of creative self-efficacy. Descriptive statistical technique was used to describe the average total score (mean), the minimum score, maximum score, and standard deviation of the variables.

3. Results and Discussion

A. Statistical Description of Research Variables

The statistical description of variables that were examined in this study are shown on Table 1 and Table 2.

Table 1. Statistical Description of Students' Self-Regulated Learning

M	Min. Score	Max. Score	SD
4.18	2.67	5.61	9.62

Table 1 shows that mean score of self-regulated learning (SRL) was 4.18. This means that most of participants (students) respond on a scale of 4 ("Moderately Agree"), from 6-Likert scales. This result explains that the use of self-regulated learning strategy of students was moderately high.

Table 2. Statistical Description of Students' Creative Self-Efficacy and Each Dimension of Creative Self-Efficacy

Dimension	M	Min. Score	Max. Score	SD
Creative Self-Efficacy	4.41	2.33	6	13.82
Creative Thinking Self-Efficacy	4.31	2.25	6	8.9
Creative Performance Self-Efficacy	4.55	2.44	6	5.96

Table 2 shows that mean score of creative self-efficacy (CSE) was 4.41. This means that most of the participants (students) respond on a scale of 4 ("Moderately Sure"), from 6-Likert scales. This result explains that students' CSE was moderately high. Moreover, Table 2 also shows that mean score of creative thinking self-efficacy (CTSE) was 4.31. This means that most of the participants (students) respond on a scale of 4 ("Moderately Sure"), from 6-Likert scales. This result explains that CTSE of students was moderately high. On the other hand, mean score of creative performance self-efficacy (CPSE) was 4.55. This means that most of the participants (students) respond on a scale of 4 or 5 ("Moderately Sure" or "Sure"), from 6-Likert scales. This result explains that students' CPSE was quite high.

B. Statistical Analysis of Main Result

Pearson correlation was used to answer the problem of this study, the relationship between self-regulated learning (SRL) and creative self-efficacy (CSE) among architecture college-students. Moreover, this statistical method was used to find out the relationship between self-regulated learning and each dimension of CSE (creative thinking self-efficacy [CTSE]; creative performance self-efficacy [CPSE]). The results of these examinations are shown on Table 4.

Table 3. The Relationship between Self-Regulated Learning, Creative Self-Efficacy and Each Dimension of Creative Self-Efficacy

Variables	1
1 Self-Regulated Learning	--
2 Creative Self-Efficacy	0.321**
3 Creative Thinking Self-Efficacy	0.269**
4 Creative Performance Self-Efficacy	0.342**

N = 159

Note. ** = significant at LoS 0.01 (two-tailed)

Table 3 shows that there is a significant relationship between SRL and CSE among architecture college-students. Moreover, it was found that this significant relationship is a positive relationship. This indicates that the higher SRL of architecture college-students, the higher their CSE. Furthermore, Table 3 shows that there are significant relationships between SRL and each dimension of CSE (CTSE and CPSE) among architecture college-students. These significant relationships are positive relationship. This explaining that the higher SRL architecture college-students, the higher their CTSE and CPSE.

According to the overall analysis, it is concluded that there are positive significant relationships between self-regulated learning (SRL), creative self-efficacy (CSE) and as well as with each dimension of CSE (creative thinking self-efficacy [CTSE]; creative performance self-efficacy [CPSE]). Moreover, the SRL of architecture college-students have more significant positive relationship with the CPSE compared with CTSE. This means that architecture college-students have greater belief in his or her own ability to express creative performance rather than in their ability to express creative thinking.

4. Conclusions

The purpose of this study is to find whether there is a relationship between self-regulated learning (SRL) and creative self-efficacy (CSE) among architecture college-students. Analysis of main result from this research has proven that there is a relationship between SRL and CSE among architecture college-student. The use of SRL strategy by architecture college-students significantly correlates with CSE and as well as each dimension of CSE (CTSE and CPSE). The finding of this study is parallel with previous studies that examined the role of

self-regulation among architectures (Beefink, et al., 2012) and on student's creativity (Jalou, 2015).

Based on the main result of this study, it is suggested for architecture college-students to improve their self-regulated learning because the higher degree of students' active participation in terms of metacognition, motivation, and behavior, the better an individual's state-like belief in his or her own ability to perform the specific tasks required to produce novel, original, or appropriate solutions (the better their creative self-efficacy). In fact, creative self-efficacy is needed for architecture college-students as a provision in order to survive in the competition of architecture world that is increasing. Therefore, it is advisable for the university, especially the faculty, to guide architecture college-students in the use of self-regulated learning.

Results of this study can be used for future research. It is advised for future research to examine this correlation among architecture college-students from more universities and cities. Moreover, it is suggested for future research to examine this correlation in other populations that require creativity as a way to be successful in their work. Lastly advise, it is suggested for future research to examine other variables that might correlate with architecture college-students' creative self-efficacy.

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