

The Relation of College Students' Process of Study and Creativity: The Mediating Effect of Creative Self-Efficacy

Chih-Feng Chuang, Shih-Ching Shiu, Chao-Jen Cheng

Abstract—The purpose of this study was to investigate the relationships among students' process of study, creative self-efficacy and creativity while attending college. A total of 60 students enrolled in Hsiuping Institute of Technology in central Taiwan were selected as samples for the study. The instruments for this study included three questionnaires to explore the aforesaid aspects.

This researchers tested creative self-efficacy and process of study, and creativity with Pearson correlation and hierarchical regression analyses. The major findings of this research are (1) the process of study had direct positive predictability on creativity, and (2) the relationship between process of study and creativity is partially mediated by creative self-efficacy.

Keywords—Process of study, Creative self-efficacy, Creativity

I. INTRODUCTION

CREATIVITY is the creative thinking ability of behavior, ideas and the finished product, based on the original knowledge, experience and owned curiosity, imagination, adventure, challenges, personality traits, using the technology of creativity through the effective process, showing smooth flow, adaptation, original, sophisticated ability to obtain the concept of novel, unique, wonderful, and the different interest. In summary, creativity refers to the integrated, holistic activities as a whole performance. Facing such highly competitive circumstances, only when we have great creativity we can deal with all the challenges of the new era.

Process of study is not only the process for individuals seek success but also the meaning and value of learning activities for students, could make their growth. Jan [1] considered that the more stronger intrinsic motivation, the more well-developed creativity. Mao et al. [2] considered that the creative process could cultivate the individual character of creativity, easy to produce and develop create motivation, which is good at innovation behavior. Therefore, the purpose of this study is to

investigate the relation of process of study, creative self-efficacy and creativity on college students.

II. LITERATURE REVIEW

A. Creativity

Creativity is a domain-specific, subjective judgment of the novelty and value on an outcome of a particular action [3]. Basically creativity include two characteristics—novelty and usefulness. The relative definition of creativity from early focus on process, next to in terms of person, then product. Amabile [4] claimed that “Creativity is best conceptualized as a behavior resulting from particular constellations of personal characteristics, cognitive abilities, and social environments”. thus creativity was proposed to be integrated into including personality and cognition to the study of creativity. Amabile [5] thought creativity is simply the production of novel, appropriate ideas in any realm of human activity. However, this contribution also needed to be useful. Zhou and George [6] also advocated new and better ways of doings to solve existing problems concerning products, services, manufacturing methods, and administrative process.

B. Creative Self-Efficacy

Ford [3] mentioned ability belief is one of the important factors of motivation for creating in his theory of creative action. Wood and Bandura [7] stated that “self-efficacy refers to beliefs in one's capabilities to mobilize the motivation, cognitive resources, and courses of action needed to meet given situational demands.” Tierney and Farmer [8] first investigated a preliminary the construct, creative self-efficacy. It differs from general self-efficacy as it is creativity-specific [8]. In other words, Bandura [9] considered it is a person's belief that he can perform a creative behavior successfully in a specific setting. Sternberg and Williams [10],[11] considered that self-efficacy took an important position in cultivation and development of individual creativity.

C. Process of Study

The creative process is good for generating motivation to develop creative behavior, so the process of study is also a key to individual creation, which is helpful for found the learning meaning and value and grow up. Therefore process of study is representative for individual successful process.

Chen [12] proposed ATDE teaching model by Asking, Thinking, Doing, Evaluation. Yeh and Wu [13] pointed out that

Chih-Feng Chuang is Professor, with the Department of Industrial Education and Technology in National Changhua University of Education, Changhua County 500-74, Taiwan (R.O.C.) (e-mail: iechuang@cc.ncue.edu.tw).

Shih-Ching Shiu is Associate Professor, with the Department of Human Resource Development in Hsiuping Institute of Technology, Taichung County 412-80, Taiwan (R.O.C.) (e-mail: ssching@mail.hit.edu.tw).

Chao-Jen Cheng is doctoral student, with the Department of Industrial Education and Technology in National Changhua University of Education, Changhua County 500-74, Taiwan (R.O.C.) (e-mail: cjcheng@mail.hit.edu.tw).

teaching methods and peer interaction could enhance students' creative expression. Sternberg and Lubart [14]-[16] thought that it is beneficial for creativity if encourage and attention a creative environment. Cole et al. [17] pointed out that teachers with creativity should give students positive feedback, rather than an authoritative way to them.

III. METHODOLOGY

A. Research Framework

According to literature review and hypothesis deduction, this study can reason the possible relationships among the three variables, process of study, creative self efficacy, and creativity. Following is the possible relationship between these three variables as in Figure 1.

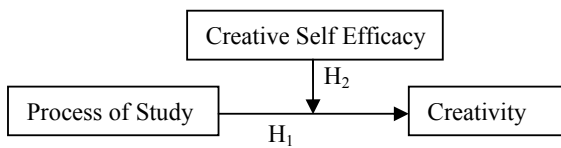


Fig. 1 Possible relationship between three variables

B. Participants

The sample of this study was recruited from creative thinking and innovation management courses at department of Human Resource Development on Hsiuping Institute of Technology in central Taiwan, purposive sampling to select about 60 students for the study.

C. Instrument

According to questionnaire review and modified, this study included three part of questionnaires: the first part for creative self-efficacy questionnaire, and the second part for process of study questionnaire, the third part for creativity questionnaire.

Creative self-efficacy questionnaire

Creative self efficacy is defined as "the belief one has the ability to produce creative outcomes" [8]. it differs from general self efficacy as it is creativity -specific. This study adopted an modified eight-item scale of creative self-efficacy according to [18] adapting general self-efficacy developed and validated by [19] [20]. There was a five-point Likert-type scale ranging from 1= strongly disagree to 5 = strongly agree. The Cronbach's α for the scale is .919.

Process of study questionnaire

In the process of creation, activities involving people, society and nature. This study adopted [21] [22] revised the "creative develop- mental factor scale" to develop *process of study* scale. There was a five-point Likert-type scale ranging from 1= strongly disagree to 5 = strongly agree. The Cronbach's α for the scale is .745.

Creativity questionnaire

This study adopted a modified thirteen-item scale of self evaluation to assess creativity [6], [20]. There was a five-point scale ranging from 1, "not at all characteristic," to 5, "very characteristic," the Cronbach's α for the scale is .924.

D. Hypotheses to be tested

H₁: Process of study is positively associated with creativity.

H₂: Creative self efficacy will mediated the effects of process of study on creativity.

IV. RESULTS

After collecting the data, the SPSS 12.0 was used to to gather statistics and analyze data. Statistics methods used include descriptive statistics, reliability analysis, correlation analysis, regression analysis.

A. Respondent Profiles

Descriptive statistics was used to illustrate the distribution of background variables. Among the samples,31.7% of the respondents are male and 68.3 % of the respondents are female.81.7% of them are first grade students, 18.3% of them are fourth grade students, all of them are students on Hsiuping Institute of Technology in central Taiwan.

B. Pearson Correlation Analysis

The Pearson correlation measurement was utilized to examine the correlations among the research variables. The correlations are presented in Table 1. The bivariate correlations indicate that creative self efficacy and process of study were significantly related to creativity ($\gamma = .793$, $p < .01$; and $\gamma = .375$, $p < .01$, respectively).

TABLE I
PEARSON CORRELATIONS MEASUREMENT

	Creative Self Efficacy	Creativity	Process of Study
Creative Self Efficacy	1		
Creativity	.793**	1	
Process of Study	.369**	.375**	1

** $p < .01$; 2-tailed significance.

C. Validation of Hypotheses

Regression analysis showed the relative importance for different factors and tested the hypothesis.

Assessment of hypothesis 1

To test the hypotheses, hierarchical regression analyses were conducted. To examine Hypothesis 1, process of study was entered at the first step, creativity last by stepwise regression. The results of column3 in Table II indicate that process of study was positively associated with creativity (H₁; $\beta = .375^{**}$, $p < .01$). The predictive equation of creativity is listed as follow: Creativity = $.375^{**}$ Process of Study + 26.456. Therefore, hypothesis 1 is accepted.

Assessment of hypothesis 2

Hypothesis 2 predicted that there were the positive relationship between process of study and creativity should be mediated by creative self-efficacy. To test this hypothesis, process of study, and creative self efficacy were entered into a regression equation predicting creativity. Then we got 2 regression equations: one is listed as follow: Creative Self Efficacy = .369** Process of Study+15.444, the results of column2 in Table II indicate that process of study was positively associated with creative self efficacy (H_2 ; β =.369**, $p<.01$) and the other is listed as follow: Creativity = .096 Process of Study+.758** Creative Self Efficacy+9.326, the results of column 4 in Table 2 indicate that t Process of Study β value from.375**reduced to.096 after Creative Self Efficacy factor was added. Therefore self-efficacy partially mediated the relationship between process of study and creativity. In sum, the hypothesis 2 is partially accepted.

TABLE II
HIERARCHICAL REGRESSION of HYPOTHESIS 2

	Creative Self Efficacy	Creativity	
		MODE 1	MODE 2
Process of Study	.369**	.375**	.096
Creative Self Efficacy			.758**
R ²	.136	.141	.637
Adjusted R ²	.121	.126	.625
F value	9.130	9.510	50.09
P value	.004	.003	.000

** $p<.01$; 2-tailed significance.

V. CONCLUSION AND SUGGESTION

This study proposed to find the relationship between process of study, creative self efficacy, and creativity. Thus, this study tested whether process of study is conducive to creativity and tested whether creative self efficacy moderates the relationship between process of study and creativity. This research found that process of study was significantly related to creativity. Besides, creative self efficacy did partial moderate the relationship between process of study and creativity. Nevertheless, the limitation of this study was little samples, only 60 students, so the results could not infer to all of college students.

Creativity is the second to none approach for industries to keep the competitive advantage under the current environment, so it is a important task for teachers to induce students' learning motivation about creativity. We suggest some methods for teachers as follows: Teachers put forward the diffusivity and convergent issues and guide students to think when designed or arranged the learning situation. Teachers should encourage students to think freely and seek creative idea when he asked questions. Teachers designed more different ways for students to learn by doing a practical activity to find a solution for problem. Teachers and students together draw up common evaluation criteria and selected the most appropriate solution,

so that creative thinking from the embryonic stage into practical stage.

In summary, previous research has supported that processes of study were potential predictors toward creative behavior [22], and results of the current study show process of study had a direct positive prediction in creativity. Besides, Though creative self efficacy partial mediation effects, process of study had an indirect positive prediction. Thus, It is a serious issue for teachers to lead students have confidence in their ability of executing their creativity in the future.

REFERENCES

- [1] J. Y. Jan, " Relevant factors of affecting creativity — consider from the environment and context of the primary and secondary education," *Student Counseling*, Vol.0, No.79, 2002, pp32-47.
- [2] L. W. Mao, Y. Y. Kuo, L. A. Chen, S. T. Lin, (2000), (Ed.), *Studies on Creativity*. Taipei, Taiwan: Psychological Publishing Co, 2000.
- [3] C. M. Ford, "A Theory of Individual Creative Action in Multiple Social Domains", *Academy of Management Review*, Vol. 21, no.4, 1996, pp1112-1142.
- [4] T. M. Amabile, "The Social Psychology of Creativity: A Componential Conceptualization", *Journal of Personality and Social Psychology*, Vol. 45, no.2, 1983, pp 357-276.
- [5] T. M. Amabile, "Motivating Creativity in Organizations: On Doing What you Love and Loving What you Do", *California Management review*, Vol. 40, No.11, 1997, pp 39-58.
- [6] J. Zhou and J. M. George, "When job dissatisfaction leads to creativity: encouraging the expression of voice", *Academy of Management Journal*, Vol. 44, 2001, pp682-696.
- [7] R. Wood and A. Bandura, "Impact of conceptions of ability on self-regulatory mechanisms and complex decision making", *Journal of personality and Social Psychology*, Vol. 56, 1989, pp407-415.
- [8] P. Tierney and S. M. Farmer, "Creative Self-efficacy: its Potential Antecedents and Relationship to Creative Performance", *Academy of Management Journal*, Vol. 45 , no.6, 2002, pp.1148-1160.
- [9] A. Bandura, *Self-efficacy: The exercise of control*. New York: Freeman, 1997.
- [10] R. J. Sternberg and W. M. Williams, "How to develop student creativity". Alexandria, VA: Association for Supervision and Curriculum Development, 1996.
- [11] R. Fisher and M. Williams, "Unlocking Creativity", London: David Fulton, 2004.
- [12] L. A. Chen, "A Study on Effectiveness of 「ATDE」 Creative Thinking Teaching Model Building and Verification", *National Taiwan Normal University Education Department doctoral dissertation*, 1990.
- [13] Y. C. Yeh and J. J. Wu, "The Development of "The Inventory of Organizational Factors to Creativity Development": An Example in Technology Companies, *Research in Applied Psychology*, Vol.15, 2002, pp225-247.
- [14] R.J. Sternberg and T. I. Lubart, " An investment Theory of Creativity and Its Development, " *Human Development*, 34, 1991, pp1-31.
- [15] R. J. Sternberg and T. I. Lubart, *Defying the crowd: Cultivating creativity in a culture of conformity*. New York: Free press, 1995.
- [16] R.J. Sternberg and T.I. Lubart, *The concept of creativity: Prospects and paradigm*. In R. J. Sternberg(ED.). *Handbook of Creativity*. New York: Cambridge, 1999.
- [17] D. G. Cole, H. L. Sugioka and L. C. Yamagata-Lynch, "Supportive Classroom Environments for Creativity in Higher Education, " *Journal of Creative Behavior*, Vol. 33, no.4, 1999, pp.277-293..
- [18] A. Carmeli and J. Schaubroeck, "The Influence of Leaders' and Other Referents' Normative Expectations on Individual Involvement in Creative Work", *The Leadership Quarterly*, Vol.18, 2007,pp 35-48.
- [19] G. Chen, S. M. Gully and D. Eden, "Validation of a New General Self-efficacy Scale", *Organizational Research Methods*, Vol. 4, 2001, pp62-83.
- [20] H. C. Lee, "The Relationship of Job Characteristics, Creative Self Efficacy, and Creativity", *National Sun Yat-sen University Institute of Human Resource Management Master's dissertation*, 2008.

- [21] Y. C. Yeh, J. J. Wu and Y. Y. Cheng, "The development scale of personal characteristics, family and school factors of affect the creative development ", Taipei: Innovation and creativity - the meaning of technical creativity and development seminars.
- [22] Y. C. Cho, "Relationships among Students' Personal Attributes, Process of study, and Creativity of Students at Vocational High School", *National Changhua University of Education Department of Industrial Education and Technology Master's dissertation*, 2006.