



To Enhance Students' Creativity Based On Componential Theory of Creativity: A Case Study of Vocational Chinese Class, Beijing Polytechnic, China

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Abstract. This case study aimed to enhance students' creativity by developing task motivation, expertise, and creativity-relevant skills according to the componential theory of creativity in the vocational Chinese class. There were five objectives of this research: to investigate the current situation of student creativity in vocational Chinese classes, at Beijing Polytechnic; to explain the componential theory of creativity; to design and implement appropriate teaching techniques to develop student creativity, task motivation, expertise, and creativity-relevant skills in the vocational Chinese class; to determine the differences in these variables of the vocational Chinese class between pre-survey and post-survey; to design a teaching project to sustain the results of a study based on the results of the quantitative and qualitative results findings. The population was 120 freshmen, and 50 students attended the vocational Chinese class by purposeful sampling. The same questionnaire was administered two times before and after the survey to determine the change level. The paired-sample t-test proved there is a statistically significant difference in four variables between pre-survey and post-survey. The semi-structured interviews and reflection reports were utilized for thematic analysis. Key recommendations are made to further foster creativity at the focal system organization at the individual, department, and university levels for sustainable development.

Keywords: Creativity, Task Motivation, Expertise, Creativity-relevant Skills, Componential Theory of Creativity, Case Study, Vocational Chinese Class

1 Introduction

Currently, people who live in a storm of technology and science are familiar with terms like creativity and innovation. Creativity is one of the key research topics constantly studied because it is the core of enterprise competitiveness and product innovation value (Baik & Kang, 2020) [2]. Borden (2019) defines creativity as creating valuable ideas or artifacts that are new, surprising, and have the ability to be creative [3]. Gardner (2021) explains that the creative mind that one must possess must be developed for the future, "going beyond existing knowledge and synthesis to propose new problems, offer new solutions, shape extend existing genres of work or configure new ones; Building

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on one or more established procedures and foundations requires an informed domain to make judgments about quality and acceptability "(p. 156) [5].

Higher vocational colleges are the main training bases for directly conveying creative vocational and technical talents to enterprises. The curriculum teaching project is a concrete work of transformation by the requirements of vocational colleges in the context of professional practice activities (Dai,2022) [4]. Based on cultivating students' vocational core competence and creativity ability, and under the guidance of the teaching concept of "weakening knowledge, highlighting ability, and implementing quality", the reform of Vocational Chinese classes in higher vocational colleges has changed from the former "Chinese knowledge imparts theory" to the "vocational innovation ability enhancement theory", and the project is used to cultivate students' Chinese application ability (Wang,2023) [9]. At present, the vocational Chinese project classes at Beijing Polytechnic emphasize the cultivation of students' career core and creativity ability, including nine comprehensive language application training projects and six theme humanistic spiritual activities. Vocational Chinese classes are facing many challenges in the process of reform. Through training in professional application writing, professional oral communication, and humanistic classics guidance, teachers and students at Beijing Polytechnic find that students' creativity needs to be urgently improved in the process of project learning.

2 Research Problem

The researcher conducted a preliminary diagnosis by using the semi-structured interview method to identify critical problems for students who are taking vocational Chinese classes. The interview sample was 20 freshmen from Beijing Polytechnic and 10 teachers from the vocational Chinese department. The interview content was conducted to analyze the problems in-depth and get the ranking of the problems. Most of the interviewees mentioned a lack of task motivation, lack of expertise, poor creativity-relevant skills, and a low level of creativity. Based on the preliminary diagnosis by strength, weakness, opportunity, threat (SWOT)model analysis, the research problem is:

Students in vocational Chinese classes at Beijing Polytechnic had low levels of task motivation, expertise, creativity-relevant skills, and creativity.

3 Literature Review

Amabile (1996) proposes a componential theory of creativity, which holds three main factors affecting individual creativity: task motivation, expertise, and creativity-relevant skills[1]. Task motivation is not only a state but also a relatively stable feature. It refers to a broad and continuous motivation orientation for the task itself. This kind of motivation is generated because the task itself makes people feel interested and challenged. Expertise in the field includes knowledge, technology, intelligence, and specific talents; The creativity-relevant skills include cognitive style, adventurous personality traits, and work styles or skills that generate ideas. The specific contents are as follows:

1. Task Motivation

thoughts and attitudes toward tasks
 perceived level of motivation for undertaking tasks (achievement motivation)
 basic level of intrinsic motivation for the task (task-driven)
 a sense of foreknowledge of significant external constraints
 an individual's ability to perceive external constraints

2. Expertise

knowledge in the field of expertise
 professional talents
 professional technical skills and knowledge
 the cognitive ability of innate professional knowledge and skills
 innate perception of personal professional experience and team skills
 formal and informal professional education and training

3. Creativity-relevant skills

personal cognitive style
 the implicit or explicit knowledge that individuals generate innovative ideas
 innovative ways of working in teamwork
 relevant experience in creative production
 individual character

Based on the above specific components of creativity and the concept of creativity, the researchers found when an individual's creative motivation is high, his participation in project-based learning will be very high, and it is easier to use creative ideas and methods to complete project-based tasks. When an individual's creative cognitive level and ability are relatively high, his creative behavior will be more frequent, because with creative cognitive ability and creative skills, he will contribute more creative ideas and methods in the process of completing project tasks.

In addition, task motivation focuses on internal attitude and motivation, expertise focuses on knowledge and ability, and creativity-relevant skills focus on creating ideas and processes, and they will affect the level of creativity. Therefore, to enhance creativity, the researcher needs to consider not only the individual's creative ability but also the application of knowledge and communication skills in the creative process.

4 Research Design

The purpose of this current research is to enhance individual creativity, team communication, knowledge sharing, creative climate, and team creativity through participatory action research methods (Leykum,2019; Mackay,2021) [6] [8], a mixed method combining quantitative and qualitative research. A quasi-experimental design was used for interventions in this current research. The researcher applied questionnaires (quantitative research), interviews, classroom observation, and reflective reports (qualitative research) to answer research questions. The research sample is 50 freshmen at Beijing Polytechnic who voluntarily chose the vocational Chinese course as a project-based learning program specially designed for this study.

5 Research Instruments

The componential theory of creativity (Amabile, 1996) [1] was measured by Zhao's (2017) [10] Creativity Scale (Liu et al., 2019) [7]. The purpose of this scale is to assess an individual's basic level of creative ideas, creative behavior, and creative participation (Liu et al., 2019) [7].

According to the research scale proposed by Liu et al. (2019) [7], Zhao (2017) based on the core self-evaluation theory and the creativity composition theory, takes core self-evaluation as the independent variable, team-creating atmosphere as the moderating variable, and creativity as the dependent variable, and adopts this scale to conduct an in-depth study on creativity [10]. The creativity measurement of this scale is mainly based on creative thoughts and behaviors, which is in line with the requirements of project-based learning teams for completing project tasks. In this research, students contribute their creativity through creative ideas and behaviors in project-based learning teams and take positive attitudes and behaviors to achieve shared creative goals.

To test the validity of the above questionnaire before it was administered to the subject of the current study, the researcher sought five experts (Ph. D holders, 3 experts in Education, and 2 experts in vocational College Chinese education). Five professors scored Item Objective Congruence (IOC), and the result showed that for items 2, 5, and 10, the average score was 0.8, and for others, the average score was 1.0. The result proved evidence for content validation of the survey instrumentation.

To test the reliability of the questionnaire, 25 respondents participated in the pilot test. After 25 respondents finished the questionnaire, the data were analyzed by a statistical analysis program to test reliability as the following Table 1.

Table 1. Reliability Result (n=30)

Variables	Cronbach's Alpha
Task Motivation	0.809
Expertise	0.748
Creativity-relevant Skills	0.893
Creativity	0.857

6 Results And Discussion

This case study utilized descriptive statistics including means, standard deviations, and t-sample tests to analyze the data in the pre-and post-survey process for quantitative research as shown in Table 2.

Table 2. Quantitative Data Results

	Mean	Std. Deviation	Std. Error Mean	T	P
<i>Pair 1</i>	1.165	.638	.087	14.03	.000
<i>Pair 2</i>	1.108	.610	.084	13.89	.000

<i>Pair 3</i>	1.023	.605	.078	12.97	.000
<i>Pair 4</i>	1.154	.623	.081	14.01	.000

Pair 1 is the difference between task motivation after and before the survey. The mean difference of task motivation in pre-and post-survey is 1.165, Std. deviation is 0.638, the t-value is 14.03, and the p-value is <0.01. So, there is a statistically significant difference between pre-and post-survey regarding task motivation through project-based learning vocational Chinese course.

Pair 2 is the difference between expertise after and before the survey. The mean difference of expertise in pre-and post-survey is 1.108, Std. deviation is 0.610, the t-value is 14.89, and the p-value is <0.01. So, there is a statistically significant difference between pre-and post-survey regarding expertise through project-based learning vocational Chinese course.

Pair 3 is the difference between creativity-relevant skills after and before the survey. The mean difference of creativity-relevant skills in pre-and post-survey is 1.203, Std. deviation is 0.605, the t-value is 12.97, and the p-value is <0.01. So, there is a statistically significant difference between pre-and post-survey regarding creativity-relevant skills through project-based learning vocational Chinese course.

Pair 4 is the difference between creativity after and before the survey. The mean difference of creativity in pre-and post-survey is 1.154, Std. deviation is 0.623, the t-value is 14.01, and the p-value is <0.01. So, there is a statistically significant difference between pre- and post-survey regarding creativity through project-based learning vocational Chinese course.

From the qualitative content analysis of the reflection report, students' task motivation, expertise, creativity-relevant skills, and creativity were all improved after the project-based learning vocational Chinese course. Students consciously generated new ideas and designs, and they were also willing to express their ideas and made use of new methods to complete creative work. Then when they encounter difficulties, students would change the communication methods to solve the problems, to help each other carry on the project task. At the same time, their creativity-relevant skills have developed and they would like to share their expertise. Finally, the embodiment of creativity was presented in the project's creative works.

Juxtaposed data results prove that creativity was improved significantly after the project-based learning vocational Chinese class.

7 Conclusion and Recommendations

This case study aims to investigate the current situation and improve students' task motivation, expertise, creativity-relevant skills, and creativity in the vocational Chinese class at Beijing Polytechnic. The quantitative data analysis of the questionnaire proved that the students' task motivation, expertise, creativity-relevant skills, and creativity in post-survey were statistically improved. At the same time, the qualitative data analysis of interviews, and reflection reports proved the conclusion of quantitative data analysis, and the students' task motivation, expertise, creativity-relevant skills, and creativity in

the post-survey were improved. This case study confirms the project-based learning vocational Chinese course to effectively promote and improve variables (task motivation, expertise, creativity-relevant skills, and creativity) according to the componential theory of creativity.

Based on research results, High vocational colleges should pay more attention to the cultivation and improvement of creativity, set up cross-disciplinary courses to cultivate students' creativity, and provide students with "Chinese + vocational education" platforms and projects for cooperative learning. According to the analysis and discussion of quantitative and qualitative data, future research on creativity should continue to expand its scope in the field of education and curriculum reform. What's more, future researchers can continue to deepen the research on the influence of team creativity from the perspective of team cooperation.

Although the study was designed and carefully conducted, it has limitations. This study is a case study, the samples of the research were only freshmen, because only freshmen took project-based vocational Chinese courses, and the follow-up results of creativity development in their sophomore and junior years could not be tracked.

Reference

1. Amabile, T.M. (1996). *Creativity in Context: Update to the Social Psychology of Creativity*. Westview Press, Boulder, CO.
2. Baik, Y., & Kang, J. (2020). Small knowledge-intensive firms' innovation and performance: The moderating effects of organizational change. *Global Business & Finance Review*, 25(2), 51-63.
3. Boden, M. A. (2019). *The creative mind: Myths and mechanisms*. New York, NY: Routledge.
4. Dai, S.H. (2022). *Holistic Educational Reform in Vocational Education Colleges*. Beijing: Tsinghua University Publishing Society.
5. Gardner, H. (2021). *Five minds for the future*. Massachusetts, Boston: Harvard Business School Press.
6. Leykum, L. K., Pugh, J. A., Lanham, H. J., Harmon, J., & McDaniel, Reuben R., Jr. (2019). Implementation research design: integrating participatory action research into randomized controlled trials. *Implementation Science*, 4, 1-8. <https://doi.org/10.1186/1748-5908-4-69>
7. Liu, X. J., Wang, Y.P., & Li, Q. (2019). Multi-level Analysis of the impact of innovation atmosphere on employees' creativity. *Management Review*, 22 (8), 84-89
8. Mackay, M. (2021). Making sense of critical participatory action research. Reflections on The Action Research Planner: Doing Critical Participatory Action Research. *International Practice Development Journal*, 6(2).
9. Wang, Y.J. (2023). Research and Practice of Chinese Project-based Teaching in Higher Vocational Colleges. *Higher Vocational Education (Journal of Tianjin Vocational University)*, 25(4), 74-77.
10. Zhao, J. (2017). The core of the relationship between creativity and self-assessment is team creative climate research. MA., Thesis. University of Electronic Science and Technology.

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