

Research on the innovative thinking and related teaching methods of English normal university students

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Abstract: Both the English Curriculum Standards for General High School and the English Curriculum Standards for Compulsory Education promulgated in 2017 and 2022, respectively, include thinking capacity as part of the core competencies of the English subject. Thinking capacity refers to the personality characteristics of human mind, reflecting students' levels and proficiency in understanding, analyzing, comparing, inferring, critiquing, evaluating, and creating, which also shows the ability and level of thinking in terms of logic, criticality, and creativity. The improvement of thinking capacity helps students learn to identify problems, analyze them and solve them, and make correct value judgments about things. Innovative thinking, or creative thinking, is one of the qualities of thinking. The focus of this study is to investigate the knowledge of undergraduates in the Department of English Education at the Capital University about the meaning of creative thinking and related teaching methods, and to make suggestions for the teacher training program of the Department of English Education at Capital University, so as to help teacher trainees in the Department of English Education master the cultivation of creative thinking at the undergraduate level and build up the foundation for their subsequent work as teachers. This study will use questionnaires and interviews. A questionnaire and an interview will be used to survey some junior and senior undergraduates in the Department of English Education, and an interview will be conducted with a senior teacher-training student who has already done internship in primary and secondary schools to understand their learning and application of creative thinking cultivation methods during the internship process.

Keywords: Creative thinking, English teacher education students, English Curriculum Standard, teaching competency

1. Introduction

Thinking capacity, as one of the core competencies in English stipulated by National English Curriculum Standard, refers to the ability and level of thinking in terms of logic, criticality, and creativity. The quality of thinking reflects the mental characteristics of the English subject core literacy. The development of thinking quality helps to enhance students' ability to analyze and solve problems, enable them to observe and understand the world from a cross-cultural perspective, and make correct value judgments about things. Among them, creative thinking, as a part of thinking quality, is one of the qualities that English teachers need to focus on cultivating in their students. In the context of the new curriculum reform, English teaching has changed from teaching students language knowledge to teaching them how to learn and developing their communicative and thinking skills, and it is even more important to let students innovate in their current learning environment and use what they have learned to solve new problems. Therefore, more and more scholars and teachers are conducting research on the cultivation of innovative thinking, exploring how English teaching can develop students' innovative thinking and make them the subjects of learning and the centers of learning activities.

In 1999, Sternberg and Lubart proposed that creativity refers to the ability to produce novel and appropriate ideas and products in a given context. Based on this, creative thinking is the advanced process of thinking, which is the process of discovering new things, creating new methods and solving new problems on the basis of one's existing experience. Therefore, English teachers need to use appropriate teaching methods and design classroom activities to consciously cultivate students' creative thinking. As English teacher trainees, it is necessary for them to learn and understand innovative thinking systematically during their undergraduate studies, and to master the theories of relevant pedagogies in order to pave the way for their subsequent work as teachers. The goal of this study is to

investigate the current level of knowledge about innovative thinking among English language teaching undergraduates and to find out which knowledge about innovative thinking they do not yet have a clear understanding of. This is where previous studies have not been available.

The author believes that this study is also relevant to a certain extent to the cultivation of English teaching-training students. By discovering what aspects of undergraduate students' knowledge of creative thinking are lacking, this study further suggests appropriate modifications to teacher training in the Department of English Education to produce more English teachers for primary and secondary schools that meet the new standards. Firstly, it will allow students to put into practice the theories they have learned in their senior year internship. Secondly, it will facilitate them to adapt more quickly to the work of teachers and learn how to prepare lessons and teach students based on developing creative thinking, as well as enhancing their pedagogical competency in developing creative thinking.

2. Literature Review

2.1 Definition of Creative Thinking

Various schools of psychology offer different views on the nature of creative thinking. According to associationism psychology, creative thinking is a process of forming novel connections between relevant factors, and the more distant the connected factors are from each other, the more creative the thinking process or solution is. Gestalt psychology emphasizes the role of the "mental field" in problem solving and believes that creative thinking is the reorganization of a problem into a new perfect form. Psychoanalytic psychology believes that creativity arises from the tension between conscious and unconscious drives. Freud believed that the process of creating a work by an artist or writer is actually a way to express one's unconscious desires in a way that is acceptable to the public. The act of creation, like many other acts of the individual, is a sublimation of egoistic desires. These ego desires include fame, power, wealth, and love. Humanistic psychologists believe that creativity is closely related to personality factors, especially to the qualities of "sensitivity to experience" and "non-reliance on principles and concepts". A researcher collected data on the IQ of many Nobel laureates in their adolescence and found that most of them were in the middle or upper IQ range, but their personalities were very different from the general population.

According to intellectual psychology, creative thinking is related to divergent thinking and convergent thinking. "Divergent thinking is the ability to generate as many ideas and answers as possible; convergent thinking is the ability to identify a single answer (Woolfolk, 2018)"^[3]. Some psychologists associate creative thinking with divergent thinking, and in Guilford's view, of the models he proposes for the structure of intelligence. It is divergent thinking and conversion that are most closely related to creative thinking. Transformation refers to the rearrangement of information. Further, he listed 23 elements of divergent thinking and 25 elements of the ability to convert. It is true that creative thinking shares many of the same characteristics as divergent thinking, and that creative thinking is usually more or first manifested in divergent nature. However, creative thinking is not exactly the same as divergent thinking, but rather a unification of divergent and convergent thinking.

Creative thinking is an advanced process of thinking, a process of discovering new things, creating new methods and solving new problems on the basis of one's existing experience. Wallas proposed the four-stage theory in 1926: (1) preparation, the stage of gathering information; (2) contemplation, the state of gestation; (3) inspiration or enlightenment, the sudden emergence of solutions to problems; (4) verification, the test of various solutions^[2]. Wallas's four-stage theory also has considerable influence and is more often cited as the stages of the creative problem-solving process, and these four stages better reflect several different cognitive states of problem solving.

It is generally accepted that creative thinking is characterized by three features: fluency, flexibility, and originality. Measures of creativity also focus on these characteristics.

Fluency of thought refers to the number of ideas produced within a limited time frame. If more ideas are produced in a short period of time, thinking fluency is high; conversely, thinking fluency is lacking. "Guilford(1967) divided thinking fluency into four forms"^[1]:

(1) Word fluency, which refers to the amount of vocabulary that can be produced within a certain time containing a specified letter or combination of letters;

(2) Associative fluency, which refers to the amount of synonyms or antonyms that can be produced from a specified word within a limited time;

(3) Expressive fluency, which refers to the amount of vocabulary that can be arranged according to the requirements of sentence structure;

(4) Conceptual fluency, which means the number of ideas that can be produced in a limited time to meet certain requirements, that is, the number of problem-solving answers proposed. The first three kinds of fluency must rely on language, and the latter can be achieved with the help of both language and action.

Flexibility of thought refers to the ability to abandon previous habitual ways of thinking and create a different direction of thinking. For example, if a subject is asked to "name as many uses for newspaper as possible," he or she will have "study," "wrap something," "use as a cushion", "folding toys", "cutting it into pieces and playing with it", "wrapping it around the body for warmth", "using it to start a fire", etc. " and so on. People who are creative involve more aspects and a wider range of thinking than the average person, while those who lack creativity usually involve only one aspect of thinking and lack flexibility.

Originality of thought refers to the ability to produce unusual and unconventional responses, in addition to the ability to redefine or organize what we see and hear in new ways. For example, in Guilford's "Proposition Test," subjects are presented with a general storyline and asked to give an appropriate title according to their own meaning. Creative people give more unique questions, while those who are not creative are often confined to conventional thinking.

This study will use the definition of creative thinking proposed by Gestalt psychology, the creative thinking process proposed by Wallace, and the characteristics of creative thinking proposed by Torrance as references. Based on this, the requirements related to the development of creative thinking will be presented.

2.2 Previous Research about the Cultivation of English Teacher-training Students

Many scholars in China have already put forward their own suggestions on teacher training. According to Gao Yanmei(2014), there are several main problems in classroom teaching for English teacher-training students in current teacher training colleges and universities.^[4] Firstly, they do not have enough understanding of the connotation of the new English curriculum and so on; secondly, they do not have enough awareness of English curriculum innovation; thirdly, they do not have a deep understanding of English curriculum objectives; fourthly, they do not know enough about English curriculum implementation and materials evaluation.

Therefore, when training English teacher trainees in universities, firstly, students should understand the requirements of the new English curriculum for the cultivation of various competencies, grasp the connotation of the curriculum standards, and have a holistic grasp of the direction of teaching. Second, students should be taught to have a sense of curriculum research and innovation. Teachers are not only lecturers, but also researchers, studying how and what to teach. They should think deeply about course objectives, teaching content, teaching methods, and teaching evaluation.

It is also important to focus on the innovation of the practical ability of education and teaching, increase the number of practical courses and focus on practical teaching so that teacher-training students can apply the strategies they have learned to classroom teaching.

Jiang Xiaohong(2021)also mentioned that in the training of English teacher-training students, there is a lack of systematic curriculum for English teacher-training students.^[5] With a disproportionate share of English major courses and a smaller share of education teaching courses, and the essential characteristics of the major are not reflected, which, together with the unsatisfactory teaching effect of some courses, leads to limited accumulation of students' essential knowledge and literacy for teachers. At the same time, there is also a lack of educational practice opportunities and guidance, and students from freshman to junior years lack practical teaching course training, such as micro-grid teaching, lecture trial, educational internship and other training. In addition, there is a lack of effective evaluation and research skills development.

The training of English teacher-training students in the context of the new era should optimize the curriculum, improve students' professionalism, realize interdisciplinary training, improve students' practice, integrate professional courses and information technology, and enhance students' teaching level.

The above-mentioned scholars have made suggestions to improve the training of English

teacher-training students from several aspects, focusing on strengthening practice and curriculum to improve the teaching literacy of English teacher-training students, but they have not given specific suggestions to improve the literacy of creative thinking, which is a very important skill for English teacher-training students. Therefore, this study will suggest specific modifications to the Department of English Education based on the inadequacies of the Department's undergraduate students in developing creative thinking literacy.

2.3 Ways to Enhance Creative Thinking in Middle School English Class

There are three main types of training methods for creative thinking, namely brain stimulation, splitting method and free association techniques. The core idea of the brain stimulation method (also translated as brain storming method) is to distinguish between generating ideas and evaluating them. The basic approach is that the teacher asks a question and then encourages students to find as many answers as possible without considering whether the answer is correct or not, and without comment from the teacher, until all possible answers have been presented.

Synecletics is a set of group problem solving methods proposed by Gordon, which originally means "the integration of dissimilar and unrelated elements" and consists of two mental processes: "making familiar things new" and "making new things familiar". The process requires students to reintroduce new and creative perspectives to old problems, old things, and old ideas, and to explain some familiar concepts from a novel perspective.

Free association techniques, in which the teacher provides a stimulus and allows students to respond freely in different ways. Students use the association techniques to find and make novel and meaningful connections from what they have already learned and experienced. The teacher does not give advice or criticism to students' ideas or opinions, but allows them the freedom to come up with different ideas and concepts in their own way. When students come up with unique and rare ideas, the teacher encourages them.

Under the new curriculum standards, teachers have to help students to form and improve the ability is the ability of innovation, innovation is the need of the times, is an important foundation for students' lifelong development. The root of students' innovative ability is to cultivate their creative thinking, and thinking is the command of action. In secondary school English teaching, students' ability to improve the five aspects of listening, speaking, reading, writing and translating is the main direction of teaching. These five areas of learning are not only the students' language activities, but also their thinking activities. Unlike other subjects, when we train students to think in English, we must also train their language skills, i.e., thinking is linked to ability and cannot be separated from the development of those five areas of competence.

In the process of teaching English in secondary schools, students' innovative ability should be cultivated according to the nature and characteristics of their own subjects. First of all, the concept of teaching should be changed. The result of education lies not only in the acquisition of knowledge itself, but more importantly in the process of acquiring knowledge. Teachers should change the concept of education, from knowledge transfer to stimulating and cultivating students' interest in learning. In addition, it is necessary to create a relaxed learning environment, which is the guarantee of cultivating students' innovative ability. Psychological research shows that students' creative thinking is more active and open in a relaxed and pleasant atmosphere, while it is difficult to develop in a tense and depressing environment. At the same time, cultivating and stimulating students' interest is the basis for developing students' innovative ability. Curiosity, imagination, sense of novelty, and divergent thinking are factors of innovative ability, which should be carefully cultivated and valued in the teaching process. Finally, teaching modes and methods should be reformed, changing language knowledge lessons into language practice lessons, setting tasks for independent discussions, and cultivating students' inquiry-based learning abilities.

In the process of secondary school teaching, in order to cultivate students' ability to think creatively, teachers should learn to stimulate students' potential and creative motivation, combine students' learning styles and characteristics, and create a good learning atmosphere and a democratic and harmonious teaching environment. In addition, they should focus on the training of intuitive thinking and develop from intuitive thinking to logical thinking to promote the cultivation of innovative ability. Finally, students should be encouraged to question and explore new things and dare to challenge the routine. Give students rich resources to look at problems from multiple perspectives and ask their own questions and ideas.

This study will focus on the perspective of creative thinking and investigate the extent to which English teaching trainees know about creative thinking and their application of teaching methods related to creative thinking. Based on the findings, specific suggestions will then be given for the development of English teacher educators.

3. Problems and suggestions of cultivating teacher-training students' creative thinking

3.1 Problems about English Teacher-training Students' Comprehension of Creative Thinking and Relevant Teaching Methods

This study investigated the level of knowledge of creative thinking among junior and senior undergraduate EFL students. Through the survey, the author found the following problems.

First, both junior and senior students were unclear about the definition of creative thinking itself. Only a very few of students know very well the definition, process, cultivation methods, and characteristics of creative thinking and related theories. Knowledge of creative thinking belongs to the scope of educational psychology, which is taught in the first semester of the sophomore year according to the teacher training program of the Department of English Education, but the data from the questionnaire show that the vast majority of them did not internalize the knowledge taught in the class. Despite having taken the class, there is still no understanding of creative thinking. Some of students are familiar with the concept, possibly because they have memorized the corresponding knowledge during their preparation for the entrance of postgraduate exam so that they are able to name the relevant concepts and theories. The lack of theory, however, resulted in the subjects not understanding the theoretical guidance and psychological principles in practice and thus not understanding why they were teaching in this way.

Second, some students did not yet have a rudimentary understanding of teaching English to foster creative thinking, mainly because of the current lack of practice. With insufficient theory, learning about concepts will never be internalized if it is not yet done from practice. Moreover, due to the epidemic, many opportunities for down school apprenticeships are missing, which is also detrimental to the absorption of knowledge. Microteaching courses will be offered under junior year, which is the first time for juniors to prepare their own lessons for teaching, and they need to take advantage of this opportunity to understand how to develop students' creative thinking skills in teaching.

However, in the dimension of cultivating creative thinking in English language teaching, most of students were very familiar with and agreed with the mentioned teaching methods and classroom activities. A large part of this is due to the need to study English pedagogy and language teaching genres in depth again in preparation for the examinations, which include an introduction to and explanation of task-based teaching and the communicative approach. These two approaches are also important pedagogies that promote the development of students' creative thinking. Once these two teaching methods are understood, there is a proper understanding of how to design the curriculum. Another big part of the reason was the internship, where students learned some of the classroom activities and teaching steps that all the teachers were using in the internship school by observing the instructors' lessons and preparing their own public lessons. By imitating experienced teachers, students learned how to teach an English lesson. These activities and steps, which are the result of experienced teachers' long teaching experience, theoretical research, and study of the standards, are effective in promoting the development of students' creative thinking.

Whereas, the activities and classroom designs that senior English undergraduates learn are largely imitations of their instructors, not their own understanding of the standards and classroom. So there is a situation where teacher-training students do not understand the theory of creative thinking and methods of developing it, but are able to design classroom activities more accurately. Imitation is not enough if you want to become a good English teacher.

As an English teacher-training student, the author believes that both theory and practice need to be given attention. It is important to develop both theoretical and practical skills of teacher-training students during their undergraduate years, and to learn to apply theories during internships as a way to promote the internalization of knowledge and to improve the literacy of developing students' creative thinking. In this way, they can adapt to the work of English teachers more quickly, learn more teaching methods more quickly, and develop their own teaching styles more quickly after joining the profession.

Therefore, next, I will put forward my own suggestions for improving the training of teacher

trainees in the Department of English Education in order to enhance the teaching literacy of English teacher trainees in cultivating students' creative thinking, with regard to the aforementioned shortcomings of the current teacher training.

3.2 Suggestions for English Education Department about Improving Teaching Competency in Cultivating Students' Creative Thinking

Through the above analysis, the author concludes that the current English teacher training programs has the following problems:

- ① Students are not clear about the definition of creative thinking.
- ② Students have insufficient opportunities to combine theory and practice.
- ③ Students simply imitate other experienced teachers without developing their own understanding of teaching and classroom.

Based on the issues raised above, I will make suggestions related to the format of exams for English teacher education majors, activities during the semester, and increasing the practical skills of teacher education students.

3.2.1 Change the examination format of educational psychology and English pedagogy

Since mastering the theoretical contents in educational psychology and English pedagogy is the key to improving the creative teaching literacy of teacher-training students. Therefore, corresponding written exams need to be set to test students' mastery of the theories, especially the proportion of exam contents such as creative thinking and task-based teaching can be increased to test teacher-training students' understanding of the theories as comprehensively as possible. In addition to the written exams, a micro-grid teaching exam format can be set. Firstly, it can let sophomore and junior students have an early exposure to microgrid teaching and have a preliminary impression and understanding. Secondly, it can test teacher-training students' application of theories related to the development of creative thinking in English teaching. Students will be scored qualitatively based on the classroom activities and teaching content they design.

3.2.2 Offer activities such as internships or apprenticeships every semester from the first year onward whenever possible

In order to enable English teacher trainees to learn more quickly about current English classroom conditions and teaching methods, the English Department is expected to organize internships or apprenticeships every semester. During the apprenticeship, questions related to creative thinking and teaching literacy can be set and students can answer the questions by observing actual classroom teaching to help students build the foundation of creative thinking and teaching literacy as early as possible. In this way, through the accumulation of six semesters from freshman to junior year, it will be easier to understand the experiences taught by the instructors during the internship in the first semester of senior year, and to design more consciously classroom activities for cultivating students' creative thinking in the process of preparing lessons by themselves.

3.2.3 Increase opportunities for English teacher trainees to prepare and teach their own lessons and invite front-line teachers from primary and secondary schools to provide guidance

The Department of English Education can offer teaching demonstration activities from the second semester of freshman year to the second semester of junior year, once every two weeks or once a month. Students would sign up at the beginning of the semester and two students would teach at a time. Teachers working in primary and secondary schools could also be invited to provide guidance on lesson planning and delivery to help teacher educators understand how to design classroom activities that promote the development of students' thinking. The final presentation of the lesson will take place in front of the rest of the class. This allows the students to practice their lecturing skills, while also having further interaction with the instructor during the lesson preparation stage, which helps to improve their teaching.

3.2.4 Invite experts to give lectures to interpret the curriculum standards

The author believes that as an English teacher training student, the study of the standards should be conducted as a professional course. Given the time constraints, experts can be invited to give lectures to explain the standards to the teacher-training students. This can be done in the second semester of the junior year so that the teacher-training students have sufficient understanding of the standards before

their senior year internship. At the same time, the junior year teacher-training students have already studied pedagogy and other specialized courses in education and have a preliminary understanding of the terms in the standards. Therefore study the experts' interpretations again, and at the same time listen carefully to the interpretations about the development of thinking qualities and how English teaching can help to promote the development of students' creative thinking.

4. Conclusion

4.1 Summary of Major Findings

In this study, the author found that both junior and senior teacher educators did not have a clear understanding of the theory of creative thinking and did not understand the meaning of the related pedagogy, even though they had taken courses in educational psychology and English teaching methods. Yet the senior teacher trainees, having had internship experience and observed other experienced teachers' classrooms, knew how to conduct a good English lesson and what methods were available to design classroom activities. But they do not know that the common principle behind these activities is the way to develop creative thinking.

Therefore, in order for teacher trainees to progress more quickly in the English teaching profession, they need to improve their pedagogical literacy in fostering creative thinking in both theory and practice. The author offers suggestions based on the findings and results of the study.

4.2 Implications of Suggestions

The author's recommendations for ELT teacher candidates based on the survey results can, to some extent, help ELT teacher candidates to gradually build their pedagogical literacy in creative thinking from their freshman year onward. The theoretical input provides an understanding of the knowledge and development methods related to creative thinking, as well as the corresponding English pedagogy and effective classroom activities. This is complemented by the practical output, in which students can learn how to apply the theory they have learned in the classroom through their own lesson planning and teaching. In addition, they will learn how their own teaching design is lacking according to the guidance of front-line teachers. They can also ask their teachers for advice on what to look for when designing classroom activities that foster creative thinking and what teachers need to do to help prepare students.

In addition to all of the above, studying the curriculum standards is also part of the task of the English teacher trainee. In order to improve the teaching quality of creative thinking, it is important to understand the goals and requirements of the standards for developing the quality of thinking. Therefore, the author also offers suggestions related to the study of the standards.

4.3 Suggestions for Further Study

In the subsequent study, the author believes that the feasibility of the suggestions mentioned above needs to be examined. Adjustments should be made to the current situation of the Department of English Education to improve the feasibility and practicality of the suggestions. It is also necessary to investigate how effective these suggestions are, which requires finding several subjects to conduct a pioneering experiment, which in turn will be a long-term process that will take a lot of time and will be a difficult challenge for the researcher

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