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# CREATIVE EDUCATION: SOME THOUGHTS BASED ON EXPERIENCE WITH STUDENTS IN CHINA

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**Creative Education:  
Some Thoughts Based on Experience with Students in China**

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## **Creative Education: Some Thoughts Based on Experience with Students in China**

### **Abstract**

We consider *creative education* to be a process of education as a result of which students are able to use creative imagination and critical thinking to solve societal problems, form new and meaningful ideas, assume risk appropriately, and be independent and flexible. In this article, we discuss how development and evaluation of students' capabilities in critical thinking, imagination, reasoning, analysis, and judgment, by using our personal experiences of creative education as examples.

**Key words:** Creative education, Critical thinking,  
Imagination and reasoning; Analysis and judgement

### Introduction

Education, whether it is children's education, education in middle or high schools or education in universities, always plays a very important role in the growth and development of individuals on their whole life. Therefore, every country, in one way or another, possibly in differing ways, pays much attention to education. *Creative education* is aimed at improving students' creativity. Osborn (1953) states in the preface of his well-known book titled *Applied Imagination: Principles and Procedures of Creative Problem Solving* that the history of civilization is a form of a record of creativity. He also cites a well-known American author, Harry Overstreet, who said that if we believe that everyone has potential for creativity, and if creativity can be taught in the education system, that potential for creativity should be greatly promoted, and the education system should be appropriately reformed. Professor Overstreet also states that we must mainly focus on motivating and training the individual's capability of

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invention and creation, and a society full of creativity, on the whole, would likely result in fastest progress of human flourishing. It should be recognized that people's creativity greatly depends on their talent. However, creative education also can play an important role in promoting people's creativity. Generally, there are two kinds of creative education. One kind is to offer a special course in developing of students' creativity. An alternative one is to take the creative education throughout the whole process of curriculum teaching. In our experience, the latter is more important for continuous improving the students' creativity. Therefore, how to cultivate creation consciousness and creation capability of individuals is a very important issue for our teachers in all levels of educations. The creative thinking methodology and approach of individuals is formulated early, at a young age. Therefore, creative education should start from individual's very young age. If creative education is neglected in the early ages, it is likely to be difficult to rectify at later age, as long as the thinking mode is fixed. In China, teachers at all levels of education are accustomed to simply imparting knowledge, but not inspiring students to think actively. The teacher commonly adopts what is called in China "Duck-stuffing" type of teaching – students are merely fed the material taught. Students are treated merely as a passive audience. And they always accept all content their teachers give them in the class, even if such content may turn out to be erroneous in some form. Professor Hong Mao has had significant professional experience of giving lectures to her students at her university. She found that even though she tried her best to use more engaging ways to give lectures, students were still accustomed to the traditional modes of study. It was necessary for her to take a rather

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long time to correct students' passive thinking ways. In the following, we will illustrate how we determined ways to cultivate students' critical thinking, open their creative consciousness, and creative capability when giving lectures to them. We will present some case studies to present the experience, problems we found, and how we propose to solve them. We do this with the objective of enhancing creative education.

## 2. Two negative examples on teachers' incorrect thinking ways

In our opinion, to develop students' creative thinking and creative capability, the thinking methods of teachers play very important roles in the education. In following, we will give two examples as negative examples to illustrate some teachers' wrong thinking way and relevant wrong conclusions they results in. The first one is that once we take part in a thesis defense. There is a thesis in which Z model is used to evaluate the credit rating of a listed company. Z model is a kind of linear model used to express the credit situation of firms based on the financial indices selected. A teacher asks his student to put all relevant data of financial indices into Z model directly and evaluate the credit rating of some firms selected. The main problem is that all of the financial indices selected, and corresponding coefficients of regression, are based on the fitting results by using the data of the companies from the United States of America, which is unlikely to be suitable to the situation in China. Another example was in analysis of a model used by an educator at a university: When someone asked the educator to test and verify the results of regression analysis done by a student, to my surprise, the educator put all data of all possible variables into multivariate regression model without carrying out any tests for multi-collinearity. However, the student started with one

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variable regression, then studied possible variables for model extension, and noted variables with significant correlation, and then used gradual process of expanding the model to establish multiple regression model, controlling for multi-collinearity. The educator ended up with wrong conclusions—as models with multi-collinearity can produce nearly arbitrary conclusions, but the greater issue was replacement of careful, and necessarily creative, analysis, by the authority of the instructor. And yet that process of careful analysis is conducive to development of creativity, especially in modeling of this nature.

### 2.3. Open-book examination can help students to be diligent in thinking

In China, closed-book examinations are most often used, as a general test form. Educators often assume that it is too easy to let students to simply copy the contents from books or their notebooks if taking open-book examination. Therefore, open-book examination is rarely used in all levels of education in China. However, in our opinion, as long as it is used appropriately, open-book testing may be a good test method to cultivate the students' capability of analyzing and solving problems. We will give an example to illustrate it. In the test of the course of financial assets valuation, there is a test question in which it is necessary to give the coefficient of annuity present value and the data of future value at given years and at given discounting rates in the test paper. If the data is directly given, it may have some suggestive feature, making it easy for students to guess the corresponding calculating methods according to the values of coefficients given in the test. However, if using open-book examination, and if there is

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no way to directly get these values of coefficients from the book, it is necessary for the students to show real effort to evaluate alternative solution methods and find the appropriate values of coefficients through calculations or searching the tables required by these different solution approaches. As a result, the students pick multiple choice solutions mainly in three specific ways dictated by the nature of the answer choices. In addition, even though closed-book examination is taken, the data needed in calculation should not be directly given. The teacher can give three or more values for students to select one of them. For example: If the coefficient of present value of annuity is needed in the calculation, two reciprocal values which are easy to be confused are given, which are the coefficient of present value of annuity and the coefficient of future value of annuity.

4. Case study should come from practice, but it is not necessary to be completely identical to those in practice.

In experimental teaching and classroom teaching, we must remember that the cases or the software we use in the teaching or in laboratory should be at least somewhat different from those in practice. We need to do some editing work so that it can be more suitable to teaching. For instance, as we talk in the first point of this article, we must make the problems more abstract, and add some adjustment to the information coming from practice by re-editing it so that students can exhibit some imagination in their discussions. In order to promote students' diligence in thinking, it is not necessary for us to perfectly copy things from practice when we write a written answer test. After

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all, the real world does not repeat itself with perfect precision. For example, for convenience of asset appraisers, it is necessary to provide them a set of complete tables of the coefficients of time value of money including six tables of coefficient of present value, future value, present value of annuity, future value of annuity, annuity of present value and annuity of future value so that the appraiser can easily find the value they want directly. However, in the textbook of asset valuation, we only need to give three of them. For the pair of tables which list the reciprocal coefficients, we only need to give one of them in the textbook. Another one can be obtained by finding the reciprocal in the numbers of the table. In this way, it can help students better understand the real meaning of the coefficients of the time value of money. Moreover, for the tables of time value of money used by asset appraisers, it is necessary to give the coefficients of each year in certain period. However, for the textbook used by students, we can give the coefficients in specific years, and have them perform some analysis of cases for other times. For example: we can give students values for 40 years, 45 years and so on, and then let students use interpolation or other method to get the coefficient values of other years not given in the tables directly.

## 2.5 How to evaluate the students' capabilities of imagination, reasoning, analysis and judging in written answer examinations

Generally speaking, written answer examination is used to examine the degree of mastery of the knowledge transmitted to students by teachers. However, written examination is also an effective way to examine the effectiveness of creative teaching.



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Here, we would like to use an example to illustrate how to evaluate the creativity of the students and at the same time, to evaluate the proficiency of the curriculum the students learn through text examination. In order to test whether the students can be diligent in creative thinking in their study, in the written answer question, if we only change one key word in a case study we presented in a discussion with students in our classroom teaching, the whole meaning may become dramatically different. The following is the example of a case study and the question asked about it:

#### **A case study in insurance adjustment**

A married construction worker had purchased personal accident insurance and he designated his mother as his beneficiary. Subsequently, he died in an accident. But his mother died three days after the death of the insured. After this second day, both the insured's wife and father request the insurer to pay the claim to them. Students are asked to discuss how the insurer carries out its insurance adjustment and distributes the claim payment.

In the written answer question, we change the sentence of "his mother died after the accident covered by insurance" in the case study discussed in the class to "his mother died before accident covered by insurance happened". After this apparently small change, the insurer would proceed completely differently about the way to pay the claim. And in answering this test question, we also required the students to discuss these two different situations, that is, whether new beneficiary is designated after the insured's original beneficiary death or not. The students must give two alternative correct answers

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based on these two different situations respectively. The statistical results of students' answering question indicate that most of students having a good thinking way and studying hard in the classroom teaching had correct answers, however, there were students who answered the questions exactly in same way as in the discussions during classroom teaching. Which of course is incorrect, but more importantly showed that the students approached this problem as a situation where they assumed they had to provide the answer given to them, instead of using creative thinking and analysis.

Creating a written answer examination which can correctly reflect both of the students' study and creative capability is a kind of science, but also it is an art. It relies on the teachers' experience and on the teachers' serious dedication to teaching mission. A good examination can fairly evaluate and distinguish different levels of students. Therefore, the teachers must feel responsible to students and be very serious about their growth and development.

The teachers must evaluate the homework finished by students carefully and seriously by themselves, find and analyze their mistakes made in their homework and correct any questionable reasoning or thinking. For instance, a student may be good at doing exercises in homework that are exactly the same or nearly the same as those discussed may have difficulties in finishing the exercises that are different from those the teacher talked in the class even with minor changes. It indicates that the students are accustomed to only repeating what they learn in class. When working with a problem like this one, the teachers should teach students to learn how to think and analyze, not simply recite the standard answers.

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## 2.6 Teachers should guide students to think from new perspectives

Here, we give an example to illustrate how to think from new perspectives. Use 6 matchsticks to create a figure with four triangles. It is obviously impossible to be realized if considering how to create it only in a two-dimensional plane. However, if people consider it in the three-dimensional space, it will be very easy to build. Actually, it is a tetrahedron, or a triangular pyramid. Wide range of knowledge and interdisciplinary can help individuals think from new angles. For example, exterior design of industrial products comes from the combination of design technology and fine arts. Corporate identity system (CIS) is the combination of aesthetics and corporate marketing. In addition, settlement the disputes of individuals' interest from a global perspective but not locality also is a typical case of thinking from a new angle.

## 2.7 How to promote teachers' creativity

Based on our opinion, there are mainly two ways to promote teachers' creativity. One is to provide teachers special training courses of creativity. Another one is to do research work consistently to help teachers develop their creativity. Doing research work can help them to better develop good teaching mode to cultivate the creativity of students. The development of students' capability of creation needs teachers to be persons with high aspiration and at the same time, they themselves must possess high degree of creative awareness and capability, great seriousness, and high degree of responsibility. The teachers' long-term practice and the accumulation of experience are also very

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important to the success in their creative education. The Ministry of Education in China and the local education bureaus request every university all over the country to apply for the students' creative projects each year and they establish some support funds to support these creative projects. And they also require each project must be carried out under the direction of teachers. However, the results are not as good as hoped. The main reason may be that the quality of teachers as a whole falls short of what was expected. Many teachers themselves do not do creative research work. Therefore, the lack experience of creative activities. It results in that the project conclusion work is muddle with their work and finally, it is hastily completed.

Generally, the education in Western countries pays more attention on developing the students' creativity, and overall level of creativity of students and professors appears higher than that in China. However, based on our observation in communication with some students and professors in some Western countries, it is not always the case. Professors are often busy with administrative work, and do not assume full responsibility in doing their research work and education work. Some researchers work by sticking strictly to the convention, with limited creativity. And the boundaries between empirical study and normative study are drawn too strictly. The researcher who does empirical study does not understand normative study, and vice versa. In our opinion, these two kinds of studies should not have drawn a demarcation line between them. Combining these two kinds of studies with each other in our research work is our special research style. It requires wide scope of knowledge. And it also offers a wide scope of knowledge that can help researchers produce new and creative ideas.

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Many people think that Chinese lack of creativity because they are seriously affected by Chinese traditional culture and the traditional education style of “duck-filling.” However, we do not think that perspective is reasonable.

Although the first author was not educated in Western country at all, she has had relative success in creative education and at the same time, she has been able to engage in scientific research in creative ways. Her students admire and respect her because she lectures in interesting, flexible, and easy to understand ways. She also pays attention to cultivating students’ creativity. She also tends to break through the stereotypes of doing things and think of things from new perspectives. She also encourages unique and individual research style for herself, her research collaborators, and her students. These days, researchers tend to follow literature and make some possible extensions and developments based on the existing literature. However, in our opinion, it is often too petty to be practical. It is rarely possible to reach an achievement with significant effect in the research area. Different from above, the first author likes to present some new, interesting, and important problems based on observation from practice.

Rich imagination is very important to a researcher. We believe that we have inherent and fertile imagination capability. It can help us to produce new and creative ideas continuously. We also can find some mistakes in literature because of our critical thinking method. Additionally, the accumulation of research work in long term can help us develop new and creative ideas. It is better for the researcher to try to do studies in multiple subjects and multiple research directions, as this promotes creativity. In this way, the role of drawing parallels from inference can help rise new ideas. In a

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conference of statistics, the first author met a scholar who came from Germany, and he told her that he has three different study directions with very large span simultaneously, including international business, investment, and statistical process control. Interdisciplinary approach can help generate synthetic research with significant influence. Engaging in research with multiple projects is a very difficult task. There are many challenging requirements for researchers, and probably only a small portion of potential researchers possess such qualifications, especially the creative ability to find previously unnoticed connections; Yet, as Aristotle said: “The greatest thing of all is to be a master of the metaphor. It is the only thing which cannot be taught by others; and it is also a sign of original genius, because a good metaphor implies the intuitive perception of similarity in dissimilar things.”

People may think that the creative capability of individuals is inborn. It should be recognized that inborn talent can play some important role for individuals' creativity. Persons who have artistic talents generally have more active thinking habits, and also have richer imagination. However, we must recognize that the effective training can help improve individuals' creativity. Investigation and analysis of the effect of person's talent, and the creative education on his (her) creativity, is a good topic for further study.

## **Conclusions**

In this paper, we discuss how to cultivate and evaluate students' capabilities of critical thinking, imagination, reasoning, analysis, and judgment by using personal experience

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of creative education as examples. On the whole, developing the students' creativity and promoting their capability of analyzing and solving problems is not accomplished easily. Correcting the students' unhealthy thinking habit needs persistent effort in long term, especially in the situation that our traditional education mode is still predominating our education system.

### **References**

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