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# Low-Carbon Education Theory Utilized in Teaching

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## Abstract

This thesis studies the concept of Low-carbon education and researches the background of the theory, then commits further analysis of the application of Low-carbon education theory in the fields of teaching. On the basis of this, the effectiveness and rationalization of application in the Low-carbon education theory in teaching were confirmed from many aspects. Among them, it is mainly analyzed both from the objective and subjective factors. These factors mainly exist in teaching methods. This thesis is developed from the following aspects: First discusses the relevant research on low-carbon education theory, define Low-carbon education and also illustrate function of Lower-carbon education in teaching; states the relationship between Low-carbon education and fuzzy theory, proves that there is internal consistency lies in Low-carbon education and fuzzy theory, these theories can be used in teaching; then discusses the investigation results under the situation of Low carbon education; at last discuss how to improve teaching methods under Low-carbon educational point of view, sums up the investigation results and puts forward the essence of teaching activity and the effective principles in teaching. It is necessary to advocate Low-carbon education in teaching in order that the complicated process can be effectively fulfilled. Teaching is not only a practice process based on text books. This can not be achieved by one single teaching method. Therefore we should advocate Low-carbon education theory in teaching in order to break the barrier in teaching and learning. We should take diversified forms of teaching, and explore the essential change so that the students can gain ability not only skills.

**Key words:** Low-carbon education; Utilized; Teaching

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## INTRODUCTION

Low-carbon economy was first put forward in 2003, in UK. They delivered energy white paper "our energy future: Creating a low carbon economy". White paper points out, UK will reduce the emission of garbage by 60% based on 1990, to create low-carbon economy, and from then on Britain turned into a country with low-carbon economy. At the same time, the Royal Environmental Pollution Control Commission presented the "low-carbon city" policy. Then, the low carbon economy rapidly spread in the world.

As a result of the changing of global environment, natural disasters and climate change have caused many scholars pay attention to the impact of carbon dioxide on global environment. So the low-carbon life has penetrated into many aspects of our daily life. In this situation, the low-carbon of education and low-carbon education has become a research direction of many educators.

Now Lets discuss what low-carbon education is, perhaps many people don't know the meaning of low-carbon education. In fact, low-carbon education can be understood compare with traditional education. The method of low-carbon education is to make full use of educatees' own and environmental factors, makes educatees fully utilize advantages of their own and environmental resource in different stages of life, radically to solve the problem of wasting educational resources in the process of education, to reduce the emission of carbon

dioxide in the process of education and realize low-carbon and environmental protection in education.

Low-carbon education contains two aspects. One refers to put low-carbon education into teaching contents, such as making students know the meaning of low-carbon life, and how to live a low-carbon life. Another is teachers should abide by "low consumption, high efficiency, high quality" educational concept in teaching activities, use the low-carbon standard to weigh the teaching life of teachers and learning life of students. It advocates saving educational resources and constructing harmonious educational system.

## 1. DEFINITION OF LOW-CARBON EDUCATION

The study of Low-carbon education begin in 2012 published an article titled *Investigation on Construction of Family Education Model under Low-carbon Education Point of View* (Li, 2012, pp.163-165), it is the new concept of education, The core idea of this theory is to research on the relationship between personal growth experience and family environment. The aim is to find out the best teaching principles and models suitable in school teaching, to establish a balanced and effective educational methods and help the student to form a better learning atmosphere, to reduce the negative rejection to study of the students and their the parents.

YU Xinchun at the end of 2009 had also put forward the elementary theory of Low carbon education and also gave out some ideas in middle school teaching. Mr. YU Xinchun pointed out the educational conception concerning of individual really get the support from the students as well as the parents. The low carbon education idea should be utilized in every aspect of students learning also in teachers teaching aspect. Low carbon education is a teaching pattern based on energy-efficient, low consumption of energy and low loss of energy. Through their upbringing interest in learning, to improve habit of study, efficiency of learning, habit of study, method of learning, then to strengthen the ability in examination, in order to reduce the burden of students' learning, this is an efficient way to reduce the anxiety of students' and parents' in the students study under the certain factors in study. Such phenomena can frequently be seen: Teachers take a lot of effort to finish teaching task, but the students learn little about the knowledge what the teachers taught; teachers teach as best as they can, but the students still act as if they had not heard what the teachers have illustrated; many educational subjects which the students should take effects on in order to develop the students' personalities, but to the students, they don't have any feeling of it, and they don't know life is colorful in learning, and the real feeling of the students is tired. Official Department of Education published a lot of policies and regulations to improve these, but there is still a distance to people's respect of education.

## 2. FUNCTION OF LOWER-CARBON EDUCATION IN TEACHING

Education in China should pursue the highest state like low-carbon education advocated. Low-carbon education is the entrance of the effective way in education. Low-carbon education must be used to educate the students; teachers should try their best to improve the level of their ability in improving teaching method. The work of the teacher contains teaching knowledge and encouraging people spiritually. To obtain the goal of low carbon cost in teaching, the teacher should take the following three points. The first is to pay attention to the content in teaching. Whether it is healthy or not is very important in the growth process of the students, and to format their personality is an essential point in teaching, it can influence their development for lifelong time. The second is to pay attention to the students. The personality and interest of the students is very important to the teacher in their teaching method. For the teacher the most effective teaching method is to teach students according to their personality and interest. That is to say, teaching should exploit the potential of the students. This is the essential requirement of teaching low-carbon education theory. This is also an effectively and acceptable method in teaching. This will ask the teacher to predict the acceptance of the students before the teacher give out the lessons. The third is to take the teaching method as an educational law, but it is quiet different it is indefinite indeed. That is to say the students should not imitate methods which are effective for others, because different individual need different method in teaching. They should use their own way in teaching. So the methods in teaching are very complex, teachers should have their own way in teaching, and also should combine with teaching concepts of others and only in this way can they explore proper teaching methods.

## 3. COMPARISONS BETWEEN TRADITIONAL EDUCATION AND LOW-CARBON EDUCATION

### 3.1 Understanding of Traditional Education

When we talked about to traditional education, we must know something of modern education; traditional education can be noted as this:

> Traditional education regards books, blackboards and chalks as main teaching resources, and it adopts the way that teachers instruct knowledge to students. Under this educational manner, teaching resources involved, such as books, blackboards and chairs and so on, will consume large amounts of carbon energy, which can not be called low carbon, on the contrary, it may be a giant who consume and expend carbon. (Li, 2010, p.23)

The use of IT in education in recent years, it is very prevailing now, to a great extent, the original education

mode has been changed. "Teaching resources is gradually digitizing, reducing consumption of papers and so on" (Ye, 2004, p.124). Nevertheless, a large number of computer laboratories have been built and campus networks utilized, which brings greater energy burden. A great deal of use of electronic energy and computer increases the amount of carbon in another perspective, costing more power.

### 3.2 The Advantages of Low-Carbon Education Compared With Traditional Education

Compared with traditional education, it seems that low-carbon has more advantages. The first one is to present and update teaching resources without papers. It is the prime task that altering knowledge present pattern, decreasing even avoiding using paper in the teaching process with low-carbon. The second is that teaching organizing patter is socialized, decentralized and flexible. The social education is not only the responsibility of school and teachers, but especially the common behavior of the whole society to carry on education in society. Changing fixed time and space into decentralized one avoids constructing the environment for just one learning behavior. The third one is to adopt the information technology equipment with low energy consumption. The hardware equipments of information technology environment adopt energy-saving ones, and fully utilize the network technology to reduce energy consumption in the teaching link. The forth one is the informationization of teaching management. "The whole education management process is informationization, electronic and paperless office. The informationnzation of management is to reduce the use of paper in the whole management process" (Sui, 2004, p.103).

### 3.3 Significance of Studying Low-Carbon Education on the Historical Point of View

#### 3.3.1 Educational Thoughts of Some Celebrities

In the early time of Socrates he proposed the "midwifery" theory, the Socratic method, including Satire (continually asking questions and make him entrap into a conflict, to force him to admit his ignorance), Midwifery (inspire, guide, through their own thinking, conclusion), induction and definition (master clear definition and concept). Socrates advocates arousing the internal proficiency of educatees by means of inspiring in the process of education, to achieve educatees' self-improvement through internalizing the external factors. The ancient Greek educator Aristotle proposed the theory about the education before seven years old, he advocated sports, and moral education and intellectual education should be divided by age according to the physical and mental development of children. Rousseau posed the education theory about developing "natural person", namely teaching children according to their growth and natural development, to make children's instinct and nature develop and naturally grow into a person who knows how to be a man. This theory requires that teaching content and method as well as children's learning and living environment must be suitable for children's physical and mental development, actually create conditions for children's natural development, stimulate children's interest and need, respect children's personality, make them give full play to their initiative and creativity, so that their physical and mental health can be developed. When Dewey talk about the nature of education in his book "humanism and education", he said: "Education is growing, education is life, education is the experience that is to continue, continuous transformation". These theories prove the importance of educatees' self-education and accomplishing education through using the educatees own environmental factors.

#### 3.3.2 Prove the Significance of Studying Low-Carbon Education

"Education is the basis of important project", the functions of education are not neglected in the history of human culture development. Nowadays, people from all over the world pay more and more attention to education. Obviously, education is a matter that concerned by the whole world. And, we should admit that education is as important as our life. Can you imagine a person who lives without receiving any education? It's essential and significant to both a country and an individual.

Low-carbon education aims at constructing high-efficiency and saving education and avoiding the waste of resource. It requires that educatees should improve themselves through school education, to achieve the minimum cost and maximized teaching effect. Low-carbon education is gradually introduced into the social development and education reform. We should expedite the construction of education informationization, implement the paperless teaching. Low-carbon education is good for the development of education modernization, promote the whole society into the "ecological civilization" period, and make education turn to be newly development model.

## 4. LOW-CARBON EDUCATION AND POSITIVE PSYCHOLOGY

The positive psychology tells that educators in the education process cannot neglect the psychological positive factors. Research shows that people in love, happiness, and upward mood are easy to accept new things. It needs many factors to form those feelings which are very important to positive psychology study.

Mainly to mobilize individual is positive factor. Whether educatee can receive education environment and education state of mind is decided by educators' means and methods. Educators in education process should protect educatee's positive psychological and provide a positive, optimistic education environment.

This study uses questionnaire survey to conduct relevant research, and subjects are departments establishing Internet-based curriculum from the same university. Instruction is offered by means of asynchronous online teaching.

Questionnaire survey is implemented among students who take both traditional face-to-face course and Internet-based asynchronous course. Questionnaire is designed according to learning effectiveness indicators proposed by experts and scholars as shown in table. Sampling is implemented through judgment sampling. To achieve objectives of this study, different analysis methods are used according to different research purposes and data attributes, including frequency distribution, independent samples test, correlation analysis and cross-table analysis.

Humane care in the education process is showed when educators comfort each of the individual by educating inside world. Educators' mission is to make educatee accept education in the pleasant atmosphere in order to achieve education purpose. This is personal psychological positive factors transfer in the process of education so is the realization of education inner-turning. It is also the idea of low-carbon education.

Focus on positive factors to the environment. Environmental factors of education process is the best safeguard for educator to realize good education result, also is the premise of the education which educators realize. So the positive mental state and optimism and the peaceful external environment is guaranteed to realize the goal of education. Environmental factors transfer is done by innovation of class forms, the teaching language of attracting style and, the relationship between teachers and students. It also is the key to the positive psychological factors to mobilize under low-carbon.

Those who run school campuses are driven by targets, budgets, competition and effectiveness narrowly defined. They are increasingly distant from the classroom and have to juggle the multiple requirements that their schools become healthy, sustainable, growing, extended, federated, as more directives constantly arrive. Despite its potential for school improvement, sustainability is likely to be a low priority over many and most will have to find their own funding for such technologies as solar panels or wind generators.

The union of low-carbon education and positive psychology is the great change of professional education of English, and is sure to put forward the new way of teaching English so as to realize the pleasure education process, and the significant results of education. In order to better reflect the students' psychological condition, and find English professional teaching breakthrough, the author in the third chapter focuses on our English professional investigation report which is to provide positive psychology research direction for low-carbon theory.

## 5. RELATIONSHIP BETWEEN LOW-CARBON EDUCATION AND FUZZY THEORY

Fuzzy theory is an important theory, is main principles crucial to all kinds of communication. L. A. Zadeh. In 1965 first put forward the definition of fuzziness, Zadeh published a thesis named *Fuzzy Sets* , give the definition of it as a class with a continuum of grades of membership on Information and Control, which marked the appearance of this new branch of linguistics-fuzzy linguistics or fuzzy theory. The classes of objects encountered in the real physical world do not have precisely defined criteria of membership. For example, the class of animals clearly includes cats, pigs, birds, etc. as its members, and clearly excludes such objects as rocks, fluids, plants, etc. However, such objects as starfish, bacteria, etc. have an ambiguous status with respect to the class of animals. The same kind of ambiguity arises in the case if a number such as 10 in relation to the class of all real numbers which are mach greater than before.

The fuzzy theory shows that the terms in the world are not of all in ordinary/simple sets; in fact, many of them are in fuzzy sets, it is not definite. Because of this it also tells that the method provided this theory is to deal with the problems in teaching. Take prototype model as a further elaboration. It adopts the essence of fuzzy set theory as the base and hypothesizes that the word meaning in the mental lexical definition is not made by a cluster of features, but defined as the most typical representation of a category of specific conceptual members, which explains the fact that in the human mind words do not have an either-or feature of semantic significance that other models such as componential analysis, free association, semantic differential and semantic network model cannot do. This model can be thought of as a fuzzy description of word meaning: "A category of concepts covering the entire range from its most typical member to its least typical one, each taking up a position on the continuum that varies in distance, or resemblance, from the prototype." (Carston, 1987, p.68)

According to low-carbon education theory we can see that low-carbon education can make the students develop talent personally and highly adapt to students' ability in educational process and its advantages. Each student has unique qualities and advantages, educators refers to the teachers should teach their students according to their ability, fully tap the students' potential, cultivate new practical talents. Low-carbon education theory is a theory which is put forward against the fixed teaching method and teaching model, contents and methods, it is also against examination-oriented educational method. To sum up, we can know that low-carbon education and fuzzy theory used in teaching has internal consistency. Because teaching should use a various teaching methods, it is concerning much about the students' life experience and their interests then take this as the basis to cultivate students' thinking ability. So that they can understand the essence of teaching materials from different aspects, in order to get further enhance the ability. Fuzzy theory used in teaching is a practical behavior of utilizing low-carbon education theory in teaching. The significance of recognizing fuzzy theory in teaching is to improve methods in teaching, and practice low-carbon education, then to achieve great progress in teaching.

## 6. INVESTIGATION RESULTS UNDER THE SITUATION OF LOW CARBON EDUCATION

Family condition: Natural conditions of the students have effected on their hobbies. Most of the students who have art hobbies come from the city. Students have strong art hobbies generally come from the families in which their parents have higher education level and usually the richer ones. But there are also some exceptions, 9 of the 13 students who like poetry come from the countryside and among them 3 are young poets who are engaged in poetry creation, and has created many poems. From analysis above we get family and social background play a very important role in forming a student's own hobbies. This should be related to the reading, living, recreational habits formed in their childhood. This is the idea elaborated in the low-carbon education theory, the main point of is parents play an important role in the education.

Hobbies: Hobby is also concerning with their interest of art or sports, the students who are fond of arts are interested in literature, relatively there are small number of the students have interest in literature love sports. This indicates that there is inevitable inner link between literature and arts.

Reading habits: Different interests can raise different reading interests some like reading novels and others like reading poet, this make the teacher think much about their teaching method in order to adapt the students' interest.

## 7. IMPROVE TEACHING METHODS UNDER LOW-CARBON EDUCATIONAL POINT OF VIEW

As a teacher in teaching activities, must fully know the situation of the students such as the cognitive process and the growth progress etc. before the give lessons to the students, the teacher should know the interests of the students as well as the educational and family background, this can make the teacher utilize low-carbon education in teaching. Teaching process is a complex process, because of the existence of many factors. Therefore it is necessary to advocate low-carbon education in teaching in order that the complicated process can be effectively fulfilled. Teaching is not just a practice process based on text books. This can not be achieved by one single teaching method. Therefore we should advocate low-carbon education theory in teaching in order to break the barrier in teaching and learning. We should take diversified forms of teaching, and explore the essential change so that the students can gain ability not only skills.

Therefore, teaching activity has become more and more tough and complicated. Internet and the teacher work with students who are actively planning and managing their own futures. Teachers prepare students for a range of career path and help them develop the skills habits and attitude they will retain over a lifetime of learning. It is a more challenging role for teachers now that the expectations are more complex.

## CONCLUSION

Low-carbon education theory make the teacher play a very important role in teaching attitude, teaching methods and teaching policy. The role of teachers influences teaching behavior strongly. It is particularly effective to initiate the usage low carbon education theory in teaching. The educators should guide educatees to learn under the following principles:

a. Learning principle is applied to the learning process. While these principles are not absolute, they do give important insight into effective teaching.

b. Ready principle if a student is ready to learn, and has a strong purpose, clear objective, and well-fixed reason for learning, he will make more progress than if she lacks motivation. Readiness implies single-mindedness.

c. Exercise principle that those things most often repeated are best remembered or performed. Basis on the principle which is provide opportunities for a student to practice and to get a goal.

d. Emotional reaction principle of effect relates of the learner: Learning is easy when the learner feel pleasant or satisfying.

e. Primacy principle things which are learned first often create a strong effect on the learner, this make the teacher must insist on correct performance first.

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