A Comparative Study on the Effectiveness of Traditional and Modern Teaching Methods

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Abstract. The rapid development of the times has also brought more advanced educational methods and concepts. Many experts advocate replacing traditional educational methods with modern educational methods. The difference between the two educational methods depends on three aspects: educational method, educational purpose, and educational focus. This article mainly lists and compares the advantages and disadvantages of modern education and traditional education methods by integrating the literature. The result shows that from a macro perspective, the advantages of modern educational methods are greater, but teachers should evaluate and choose which teaching method to use according to the student's situation, teaching purpose, and potential obstacles.

Keywords: Student-centered Class, Teacher-centered, Traditional Teaching Method, Modern Teaching Method, Lecture-style

1 Introduction

Education has always been one of the most important areas of human civilization since ancient times, because the development of a country's education is closely related to its future development. The traditional teaching method is teacher-centered to impart book knowledge to students. In ancient times, traditional teaching methods were more common because teachers wanted students to learn fixed knowledge and get good scores on exams. In the traditional classroom, students must obey discipline to ensure a good learning environment and teachers are the controllers of the class. With the development of the new era, science and technology are more developed, and people's thinking is more active. Students not only want to learn from textbooks but also are attracted by innovative knowledge. To improve the quality of teaching and provide students with a better education, modern teaching methods are also widely used. Modern teaching methods pay more attention to improving students' values and abilities. In the modern classroom, the teaching atmosphere is more relaxed, and there are multiple technology products to assist teaching and the classrooms are student-centered. The two different teaching methodologies have specific advantages and disadvantages. The main purpose of this paper is to discuss and compare the effects of traditional teaching methods and

new technologies on teaching. People in the future education field can analyze the benefits and drawbacks of the two methods and use different methods on different students. In this way, the efficiency and quality of teaching can be greatly improved.

2   Thesis Statement

The difference between modern teaching and traditional classroom is not only the difference in teaching methods but also the collision of new ideas and old concepts. Existing studies have expounded the collision of the two from the teaching organization process of teaching concepts, learning methods, and so on. In the old concept, the traditional education mode had to be teacher-centered and text-centered. Most classes are taught in the form of lectures. In the lecture, the professor will ask the students to memorize the theoretical knowledge from the textbook and recite the syllabus to prepare for the examination. To prepare for the examination, teachers will ask students to memorize theoretical knowledge from books and practice thousands of mock exam questions. According to Manuel Duarte João Pires, traditional education policies not only put pressure on students but also turn them into testing machines. The essence of education has changed from educating people into talents to cultivating talents for examination [1].

In the new educational concept, the purpose of education is not to test, but to inspire students' creative thinking. Modern education emphasizes that the process of education and teaching is a highly creative process. The basic goal is to inspire, guide, develop and train students' creativity. In the research conducted by Bc. Viera Boumová, the author indicated that both teaching methods can improve students' knowledge levels, but modern education is more active in promoting communication and learning motivation [2]. However, modern teaching methods and traditional education methods are not absolutely good or bad. Although traditional lecture-style teaching is more boring than high-tech classrooms, it can be more effective at improving test scores. According to the study conducted by Guido Schwerdt and Amelie C. Wuppermann, "Increasing the overall time devoted to lecture style teaching leads to an increase in test scores when explicitly including the two problem-solving categories and the other class activities." [3]. The two teaching methods each have their own advantages and disadvantages. To compare the effectiveness of traditional and modern teaching methods, they are mainly analyzed from three perspectives: teaching technique(approach); teaching forms, and bias of focus in learning.

2.1   Technology

With the development of technology, there are more and more technological products for the purpose of education. A variety of teaching aids and technology products provide teachers with more choices in teaching styles. There are lots of advantages to using high technology in education. Multimedia is a good teaching aid for instance. According to the study "Application of Multimedia in Education", Multimedia can benefit students mainly in two aspects: diversification and flexibility [4]. Firstly, multimedia can

transform abstract words into picture format, thus showing knowledge vividly and easily to students. Without the limitation of traditional teaching books, teachers can also make innovations on PPT. Based on previous teaching experiences, teachers can use extra-curricular knowledge to expand students' knowledge scope. To help students better understand complicated knowledge, teachers can also make an explanatory animation to aim teaching. Second, multimedia enables video recording of the teaching process so that students can review or preview the course at a convenient time. More flexible time and location choices greatly enhance learning effectiveness. However, the improper use of multimedia even inhibits students' learning ability. If there are too many pictures and words in the PPT and they are flashed during the presentation, students will lack thinking and will not be impressed with the knowledge. In education, research, thinking, analyzing, and learning are several important and inseparable links. While learning, we must pay attention to the role of thinking.

In modern classrooms, teachers will put every knowledge point within PowerPoint, which leads some students to think they can just review PPT instead of taking notes to prepare for the examination, which will lead to the situation that the knowledge cannot be remembered deeply in the brain. To avoid the disadvantages of using high-tech teaching, different methods should be used for different subjects. Some subjects that focus more on thinking application and deep calculation should be taught in traditional ways. Traditional lecture-style classes can help math, physics and other science majors focus on calculation and comprehension. Multiple pictures, animations, etc., will disturb the mind's concentration, resulting in a lack of deep understanding of the knowledge. In the study conducted by Guido Schwerdt and Amelie C. Wuppermann, they found evidence for a stronger effect of lecture-style teaching in math [3]. The benefits of a scientific education can be seen in other subjects as well. The study "Impact of students' use of technology on their learning achievements in physiology courses at the University of Dammam" claimed that "there is a significant relationship ($r=0.42$, $p<0.05$) between students' use of technology and their achievements in physiology courses at the colleges of health. It also showed that the most-used devices are laptops (50%) and phones (42%) followed by tablets (7%) and desktop computers (0.5%)." [5]. These two studies show that a specific teaching technique does not work on every subject. The effectiveness of educational methods will vary for different groups of people. Therefore, teachers should analyze and differentiate the use of traditional or modern teaching methods according to different subjects.

2.2   Passive and Active Learning

There are three main ways of imparting knowledge, active, passive, and interactive. The traditional passive way of education is a lecture-style classroom centered on the professor, with little interaction between teachers and students. Some experts believe that in this learning mode, the professor plays the authoritative role of instilling knowledge into the students, and the students are the listener. Any immature, wrong, or heretical views will be rejected by the teacher, resulting in the students' learning initiatives being rejected, ignored or even suppressed. Although the lecture-styled teaching

method is opposed by many experts, it still has many advantages. In the book "Handbook of College Teaching: Theory and Applications", the authors suggested some advantages of lecture-styled classes. For example, this method can be used to well explain academic terms, teach a large number of learners at a low cost, and cover more materials and explain them in a macroscopic way compared with other approaches [6].

Despite the traditional lecture-style teaching has been criticized by experts, the evaluations of students are not all against it, and many students even support lecture-style teaching. In the study of college students' perceptions of the traditional lecture method conducted by Amy E. ovill, the researchers select 8,000 college students and put them in a lecture-style class taught using PowerPoint. In class, students need to take their own notes, the teacher will ask one or two questions during a class, and students will have additional free practice but no points will be counted. At the end of the semester, students are required to do a class evaluation, which is a 13-item Likert-scale questionnaire [7]. In the Likert-scale survey, "not sure" = 0, "strongly disagree" = 1, "disagree" =2, "agree" =3, and "strongly agree" =4. The researchers found that above-average students felt that lecture-style courses taught them all the key knowledge logically(M=3.57), reducing the sense of responsibility for self-learning outside the classroom(M=3.39). In addition to this, 88% of students rated their test scores above a B, with the majority rating professors and classes as "excellent." [7] Different from passive teaching, both active and interactive methods all belong to modern educational methods which are mainly student-centered and advocate interactive learning, cooperative learning, and inquiry learning. Dr. Madona Giorgadze and Dr. Marine Dgebuadze state: "The main difference between active and interactive approach is that, in contrast to active approach, interactive learning involves students' interaction not only with the teacher but with each other as well."[8] The advantage of the modern teaching method is that it can develop the potential of students, and students can stimulate interest in learning and creativity during the process of interaction with teachers and classmates. The interactive class is a new teaching mode that not only improves study but also trains social skills. It mainly changes the state of the curriculum that emphasizes too much accepting learning, rote memorization, and mechanical training for students.

Teachers will assign groups and assignments in interactive classes that require students to collaborate, research, and discuss with one another. Cooperative learning can be a good way to encourage students to actively participate in class and be willing to explore. This approach can also cultivate students' ability to collect and process information, acquire new knowledge, analyze and solve problems, and communicate and cooperate. According to the study of "interaction teaching methods: challenges and perspectives", the interactive approach can help students better memorize and understand new materials. Figure 1 shows that participating and engaging in learning enables learners to memorize about 70% to 90% of what they said and did. Based on the above materials, both lecture-based and interactive classes have their own advantages and disadvantages. Experts suggest that professors can choose the teaching approach according to the teaching goal and the needs of the students. For example, do a survey before the class starts, what students want to learn through this class, etc., and then increase or decrease the interaction according to the situation.
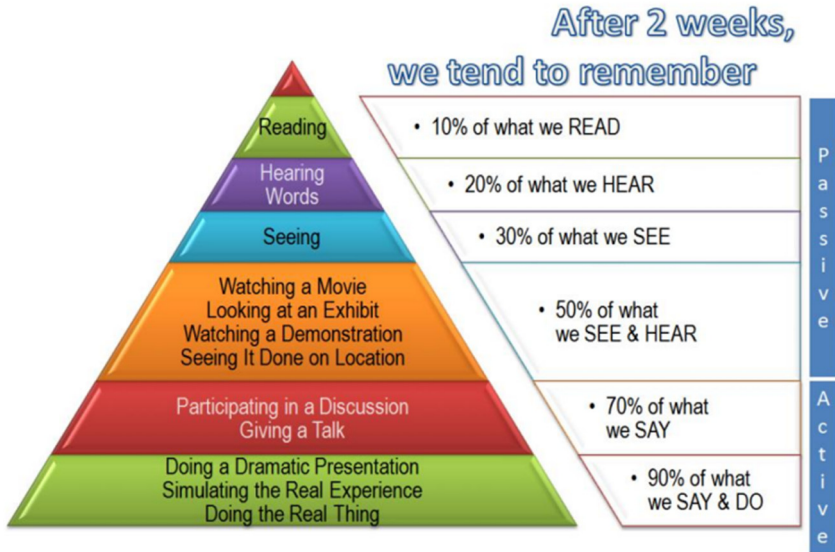
Fig. 1. Passive and active learning diagram [8]

Table 1. College students' perceptions of the traditional lecture method [7]

Statement/Question	Response
1. Students were required to work hard for a good grade in this class.	M=3.18, SD=1.05 ("Agree")
2. I feel I learned a great deal in this class.	M=3.57, SD=.70 ("Strongly agree")
3. I feel I will remember much of what I learned in this class for some time.	M=3.20, SD=1.06 ("Agree")
4. I relied on my classmates to help me learn the information for this class.	M=1.71, SD=.88 ("Disagree")
5. I relied on reading assignments to learn the information for this class.	M=1.86, SD=1.04 ("Disagree")
6. I relied on the professor to give me the information I needed to know in this class.	M=3.39, SD=.75 ("Agree")
7. I had to figure out what was important in this class and learn it myself.	M=1.57, SD=1.0 ("Disagree")
8. How many hours per week, outside of class time, did you spend preparing/studying for this class?	61%: "2-5 hours" 27%: "Less than 2 hours" 12%: "5-8 hours"
9. Based on how much I learned, I would rate the professor of this class as...	M=3.73, SD=.53 ("Excellent")
10. Based on how much I learned, I would rate this class as...	M=3.63, SD=.63 ("Excellent")

11. The grade I expect to get in this class is...	45%: B
	43%: A
	8%: C
	2%: C+
	2%: C

2.3   Student-centric and Teacher-centric Learning

In addition to teaching equipment and teaching formats, traditional and modern education can also be differentiated by learning focus. The traditional education method is teacher-centric learning and modern education is learner-centric learning. Teacher-centered learning is usually a traditional lecture-style class where the professor manages and leads students to learn. The professor will design a syllabus based on the textbook structure and logic and distribute it to each student. In the lecture, the professor will complete the teaching through the formulated syllabus, and both extracurricular knowledge and complex questions will be ignored. The advantage of teacher-centric classes is that every knowledge point related to the exam will be on the syllabus, and students can use the syllabus to review them after class. Besides, strict discipline management reduces external interference for students, and the serious classroom atmosphere will infect every student to learn consciously. However, this education method not only makes students too dependent on professors and does not think for themselves, but also has many disadvantages. Recent research called "A Comparative Analysis of Traditional Education System Vs. e-Learning" has pointed out some main disadvantages of teacher-centric learning. Researchers point out that professor-centered classrooms lack opportunities for cooperation and communication among students. Fixed syllabuses are not only boring but also fail to expand the knowledge and understanding of learners [9]. In contrast, in a learner-centered classroom, the teacher becomes a facilitator and students can choose to learn about the knowledge they are interested in. In student-centered teaching, students' opinions are respected because the main purpose of this modern teaching approach is to develop students' abilities and interests. The course does not have a fixed syllabus, but the professor will adjust the teaching style, content, and assignments according to the needs of different students during the teaching process, and actively respond to students' questions. Tailor-made study plans for students have many advantages over traditional educational focus. However, it not only requires high educational costs but also does not support large-scale teaching. Applying this educational model to aristocratic education and special education can perfectly solve the problem of high cost and inappropriateness for the general public. Special education refers to the use of specially designed curricula, teaching materials, teaching methods, teaching organization forms, and teaching equipment for children with physical and psychological development disabilities. The essence of special education, like a student-centered approach to education, is to help students develop intellectually and acquire life skills to the greatest extent possible. Based on the literature research, modern teaching methods, such as the use of domains and clusters from FFT, can effectively improve test scores, sustained attention, and self-perception of special students [10]. The common point of aristocratic education and student-centered education is to provide learners with the best education and explore their potential.

Whether it is a traditional professor-centered education method or a student-centered modern education, both methods have their own advantages and disadvantages. To maximize the advantages of different methods, the choice should be based on the teaching effect expected by learners.

3   Conclusion

According to numerous research studies, the advantages of modern teaching methods are more prominent. The modern teaching method can better cultivate the talents of students, can be used in special education, and so on. But if you only pursue the advantages of modern teaching without knowing how to avoid the shortcomings, the teaching method will not be effective. There is not enough literature to justify more of the merits of traditional education. Future research will pay more attention to the application of traditional educational methods and modern educational methods in wider education and other applications and will also study educational methods that combine the two types of education.

Acknowledgment

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