

On the construction of the innovative practice of chinese educational theory in the new era with international standards

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Abstract: In order to realize the effective evaluation of project-based learning, we need to update some educational theories: the big situation, that is, the effective evaluation of the whole project-based learning must first construct the big situation, the problem situation or the real situation. Only when all teaching takes place in the most appropriate teaching scenario can we make learning effective and establish a permanent link with the subject's cognition. In order to make project-based learning realize its efficient value, it is not subject to the teaching theme. A series of solidified teaching modules, such as project-based learning process map, STEAM-PBL process map and toolbox system, must be formed due to the impact of school scenarios and regional development. At the same time, the cognitive system of educational theory supported by the construction and thinking, such as teachers' value awakening, students' growth path, thinking visualization tools, teaching evaluation visualization, teaching dualistic balance theory and other concepts.

Keywords: new era; China's educational theory innovation; project-based learning.

After systematic and profound historical inference, theoretical determination, practical judgment and ideological appraisal, General Secretary Xi solemnly declared that socialism with Chinese characteristics has entered a new era in the report of the 19th National Congress of the Communist Party of China. It can be concluded that this great political conclusion shows that the Communist Party of China is a ruling party full of vitality, energy and courage to take on responsibilities, and the construction of socialism with Chinese characteristics is also in a growing stage. The demonstration of the new era is the historical result and fruitful practice of all the theories and practices of the Party in the past 40 years since the reform and opening up. It is realized on the basis of the material and spiritual construction in this time and space. The long-term practice of socialism with Chinese characteristics is the most important historical basis and historical basis for socialism with Chinese characteristics to enter the new era. Great practice gives birth to great theory. The realization of the new era of socialism with Chinese characteristics is also based on a thorough understanding and grasp of the development law of socialism with Chinese characteristics. It is mainly reflected in the Party's scientific grasp and profound understanding of the changes in the major social contradictions in China. The changes in the major social contradictions are historic changes that affect the overall situation, determine the new changes of the times, and determine that the Party and the state must make new requirements for their work. Since 1981, when it was proposed that the main contradiction in the primary stage of socialism in China was "the contradiction between the people's growing material and cultural needs and the backward social production", the country has entered a "new era" of reform and opening up. In the following 40 years of building socialism with characteristics, we have made great achievements. The people's lives have undergone tremendous changes. The level of social productivity in China has improved significantly on the whole. The social production capacity has entered the forefront of the world in many aspects. The main social contradiction in China has gradually turned into "the contradiction between the people's growing needs for a better life and unbalanced and inadequate development". The whole practice is required to continue to develop and enter a new era, that is, strive to solve the problem of unbalanced and insufficient development, vigorously improve the quality and efficiency of development, better meet the growing needs of the people in economic, political, cultural, social, ecological and other aspects, and better promote the all-round development of people and social progress.

It is self-evident that education has far-reaching significance for the country. Especially after the Second World War, the monopoly of talents in the field of cutting-edge science and technology is a huge overt threat to any country. Therefore, the United States still chose German prisoners of war scientists and gave up huge cash interests in the World War II compensation. The United States is a very smart country, and its national political strategy should also be worthy of in-depth study and systematic thinking by any country. After the Second World War, American politicians saw that the instability of Asian scientists seriously affected their international hegemony interests, so they asked the education department to seek K12 education for professional talents, hoping to harvest cutting-edge talents on the premise of increasing the base. Therefore, the first and only education reform in the United States has been implemented in this way, because it involves specific disciplines, and is later called "STEM" education. Its initial understanding is a discipline integration idea. After the integration of Oriental cognition, the interdisciplinary integration of generalized cognition began to emerge. Subsequently, in order to find teaching methods that can effectively implement STEM education strategies, after referring to Canada's "problem based learning", project-based learning began to appear in the United States, and Buck Education Research Institute became the most authoritative non-governmental organization to promote project-based learning. In the process of promoting this educational reform, a series of complementary concepts and related technologies have emerged in American education, such as life education, national identity education, in-depth learning, personalized learning, etc. If we compare our educational practice and ideas with them at the same time, we will find that although the two countries have different forms of expression, they have finally formed highly similar educational ideas, such as the simultaneous development of the five

educations relative to STEM education, the large unit teaching of project-based learning, and the ideological and political courses relative to national identity education. Next, take project-based learning as an example to make a preliminary study on the localization of project-based learning. The following views are put forward on the basis of China's first-line teaching practice, which is in line with the national conditions of China's teaching practice, teaching conditions and learning conditions. They are fully in line with the vision and original intention of the localization of education concepts.

It has been nearly 20 years since project-based learning was first introduced into the theoretical research field of basic education in China by experts and scholars. During this period, there have been several high tides of attention and promotion at the national level. However, as time goes on, each "academic high tide" will only have ripples soon after, and it is difficult to find "waves". But in contrast, foreign countries have been doing it in full swing. Why? At that time, few people were able to give the most accurate answer, but as we have more and more information about foreign educational theories and practice phenomena, this difference at home and abroad finally got the most accurate answer.

To analyze this difference, first of all, there must be a cognitive consensus that the world educates the United States as the most representative and research worthy case. In other words, to study modern and contemporary education, first of all, we should deeply study American education, and study how the United States dominates the world, and how it has always dominated the world. We should know that only the research on the "first place" is valuable and meaningful in terms of development and competition. Secondly, there is also a cognitive premise that the entire modern American education is viewed as a complete whole with time as the axis. It is worth noting that even in the United States, there is no relevant research on its modern education history. Combined with the above two prerequisites, the United States was able to "stand out" in World War II first because of its unique geographical advantages and heritage. The geographical advantage is easy to understand, because it is not the main battlefield. At the beginning of World War I and World War II, it was more like a resource repository. The consumption of the European battlefield constantly tempered the basic metabolic capacity of various American industrial technologies, and completed the quantitative accumulation of development and hegemony. The second is the late entry, which has enabled the United States to have nearly a decade of security development. During this period, almost all other countries have lost their lives and lost all their jobs. This has given the United States the wisdom to develop hegemony. Inheritance of blood lineage means that most of the immigrants who came to America at that time were ideological and enterprising individuals on European land. They would certainly have huge potential if they went across the sea to start a business or survive. In a word, education at this time is only the most basic support and guarantee. After the end of World War II, the world returned to a relatively peaceful state again. In order to maintain its hegemony, American think tanks first saw the great value of talents, especially the importance of localized talent training. So STEM education came into being at the historic moment. When the entire national education authority was trying to implement STEM education, the front-line medical workers sent PBL (project-based learning teaching method). As for the subsequent in-depth learning, personalized learning, and learning science, they were all derived from further promoting and implementing the realization of American education support functions. In recent years, the field of foreign basic education has attached great importance to the teaching design and practice penetration of subject concepts. Looking at nearly a hundred years of American modern education history, it will be found that this is an inevitability after more than 70 years of project-based learning and STEM education. In other words, education attaches importance to concepts as an inevitability of the development of any educational theory and practice. Concepts are the extraction of the intrinsic and essence of things, and are "yes" education, instead of "like" education. Since the beginning of the 21st century, project-based learning has been introduced into the domestic academic field of education by Chinese experts and scholars. Later, after continuous academic fermentation, it has quickly blossomed in the front-line teaching. It can be described as a time trial project with themes everywhere. A great example of further deepening education reform is the transformation and localization of project-based learning. Subsequently, a series of supporting ecological products such as various project-based experts, classic lessons and events emerged in endlessly. Front line teachers are eager to see lesson examples everywhere. Finally, they saw a variety of lesson examples and standard paradigms. At this time, teachers began to reflect on what is project-based learning and how project-based learning should design teaching. However, few experts and scholars can really answer these questions. Even if some teachers pay for the purchase of relevant project-based learning courses, there has not been much improvement.

After four years of teaching practice and systematic research on STEM education and project-based learning, systematically sort out and internalize its related concepts, and systematically think about project-based learning.

1. Key factors of project-based learning to ensure teaching quality

In the teaching practice of project-based learning, there are two keys, one is the core problem, also called the essence problem. The second is driving problem, also called situation introduction. The core problem is to find core knowledge. One of the characteristics of project-based learning is to point to core knowledge. In teaching practice, it is usually understood as factual knowledge or technical knowledge. In fact, core knowledge is the essence of a subject or the key concept and ability to promote students' understanding of the world, which is the key factor for project-based learning to ensure teaching quality. The second is the refinement of driving problems, which is an effective implementation path to ensure the quality of project-based learning teaching. Driving problems must be closely linked with core problems, and provide support for the efficient solution of core problems. Therefore, the core of the implementation of project-based

learning curriculum is the design of driving problems. The essence of the driving problem is the teaching goal, that is, the implementation strategy, while the core problem is the quality goal, that is, the training goal. Because the driving problem is so important, we have designed the refining criteria for the driving problem: first, the problem should point to a comprehensive task in the real context. Second, integrate and implement the learning objectives of the core quality of the discipline. Third, lead students to actively use the known to explore the unknown. Fourth, provide students with opportunities for creative solutions.

In addition, based on years of teaching practice, we have comprehensively and meticulously decoded the curriculum standards for all subjects in primary education stage against relevant textbooks, and mapped the key abilities and core qualities in the curriculum standards with specific chapters and practice classes in the textbooks. Combined with artificial intelligence technology, the construction of an algorithm based knowledge map teaching evaluation consistency platform is carried out. Information technology is used to enable the visualization of the full path of traditional education and teaching, and by this way, teaching and learning, goals and practices are effectively linked to determine the personalized learning path analysis and embedding for each learning terminal. In this process, we have carried out a systematic study on the theory and practice of blended learning and personalized learning, because they are two key technologies to carry out project-based learning teaching. Hybrid learning has a long history. At the earliest, it was just the combination of Internet technology and traditional teaching. It has been developing slowly, and even was once shelved or forgotten. However, with the outbreak of the global epidemic, blended learning has been strongly pushed into the wind of human learning for the first time. We hold this view on blended learning: First, the focus of blended learning is not on what to mix, but how to mix, so as to optimize the teaching effect. Second, the three elements of blended learning application are the organic and systematic application of methods and forms, the balance between the real needs of the teaching situation and the actual teaching, and the practical operability of technical support from the perspective of parents, teachers and students. Viewpoint of personalized learning: The implementation of personalized learning in the form of hierarchical teaching has a variety of huge, objective and inevitable limitations, but it is also an efficient strategy that human learning process has to think and practice. Artificial intelligence technology can realize the cognitive hierarchical teaching process from the cloud, thus breaking its own limitations in the real organizational form.

2. Effective evaluation strategies for project-based learning

Effective evaluation is based on effective teaching. Effective teaching should see every real student and trust every student. Students have different cognitive origins, namely, metacognitive structures, which are brought about by family education, parental inheritance, partner parallelism and personal cognitive habit acquisition. With the acquired admission education, students have further solidified their cognitive accumulation. Different students will give different self identifications based on their own metacognitive structure when facing the same learning content or tasks. For example, A may think that this matter is very simple for him, B may think that this matter is difficult for her, and C may think that this matter is very ordinary for him, but for the sake of the unified task goal of the group, They will help the team succeed by selecting the tasks that are most likely to succeed and can complement the team's capabilities according to their own perceptions. This is the premise logic for us to form the project-based learning concept. The concept of project-based learning believes that learning science is the theoretical support and scientific basis of project-based learning. Technology empowers education. The technology here includes not only explicit technologies such as artificial intelligence technology and brain science technology in learning science, but also implicit technologies such as educational technology and teaching skills. Project-based learning can be divided into five elements: first, attention attraction drives problem setting; Second, the spirit of contract is autonomy. In order to achieve the unified goal, namely the teaching goal, the collective is the guarantee of teaching quality; Third, free choice is the ability modeling or competency building, which is the key for teaching to see every student and the key attribute of project-based learning teaching quality assurance; Fourth, social connection refers to group cooperation to increase students' sociality and achieve educational growth; Fifth, the unity of objectives is product representation, which is the teaching evaluation of project-based learning. Evaluation can only be evaluated if it is concrete. Making the evaluation visible and perceptible is the best education. If feedback is needed, it should be fed back to every learner and professor, that is, learning participants.

The high value teaching strategies of project-based learning include effective teaching and evaluation of project-based learning, which can be applied to large unit teaching, consistent classroom construction of teaching evaluation, and construction of students' learning map, because they have high compatibility with common attribute elements.

3. Project based learning teacher training mechanism

No matter how good the teaching concept is, it must have its own free ecological support system. Teachers are the most critical link in the education ecosystem. Only when teachers change can the classroom change. Only when students experience different ways of growth can they learn different learning power models. The teacher training of project-based learning must be supported by its unique system mechanism. The project-based learning process map, STEAM-PBL process map and toolbox system mentioned earlier are a series of solidified teaching modules and updated theoretical concepts, project-based learning discipline map, project-based learning ecosystem and curriculum system that are necessary for project-based learning teacher training.

References

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