

Teaching Evaluation Based on Project Learning

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Keywords: Project-based learning, Teaching evaluation

Abstract. Project-based learning is based on the real world problems, through the organization of study groups, students with the help of information technology and a variety of resources development and exploration activities, in a certain period of time to solve a series of interrelated problems, and the research results in a certain form of release. Project learning related research in recent years has had a significant influence in the field of education in our country, but there is no form a teaching quality evaluation system to project learning, quite a number of project learning practice still adopts the traditional teaching evaluation, the method of establishing the project type teaching evaluation system has become a project learning and in-depth development of the key factors. It is very important to establish the combination of process and result, and to pay attention to students' attitude, emotion and values. This paper mainly studies project-based learning and its teaching evaluation.

Introduction

Introduction to Project Learning. PBL(project-based Learning) refers to the teaching process in which teachers carefully design teaching contents into practice-driven projects, organize, guide and motivate students to explore Project answers and solve problems through existing knowledge and mutual cooperation. This teaching method needs to pay attention to the following three points: 1. Teaching project is the result of the course content and practice. It can not only reflect the knowledge points mastered in the course requirements, but also closely combine with practice, which is the reproduction of the practice scene. Therefore, students can improve their comprehensive quality and discipline ability in the process of exploring the project results. 2. Teachers play a guiding, inspiring and coaching role in project-based learning. Change the traditional classroom model of teachers speaking and students listening to form an active learning model of "project as the main line, students as the main body, teachers as the leading". 3. This is a set of systematic teaching methods. From project design, project implementation to project result evaluation, careful design and whole-process guidance are required. Project-based learning originated in the United States and prevailed in foreign vocational education. Some countries form an interconnected series of courses from junior and senior high schools to vocational colleges and undergraduate programs. Practice has proved that project-based learning can play an important role in cultivating students' core qualities and developing certain subject competence.

Research Status of Project-based Learning at Home and Abroad. At present, project-based learning is also widely used in foreign countries, which is in a highly respected teaching mode. In the United States, project-based learning is one of the main learning modes of research learning. Theory of foreign research achievements on project-based learning is rich, has been basically mature, practice and plenty of examples, especially noteworthy is that they are application progress, from its research and development, the initial focus is based on the project learning itself and its application, and paying attention to the application of information technology in the project-based learning. Project learning is a very worthy of popularization, the new approach to learning can promote students to learn effectively, project learning has been widely used abroad and has formed a complete theoretical system, project learning is a kind of new things at home, was introduced for

nearly 20 years, just at the development stage, and the majority of college and middle school and vocational school, rarely applied to the primary school, and every school is essentially "solo" respectively, the lack of cooperation and communication between school and school, in every school in the level of the project learning progress is uneven. To do this. Primary schools at the stage of development should strengthen inter-school cooperation and share practical resources in the process of carrying out science project learning, so as to provide more sufficient conditions for the carrying out of project learning. Teachers enhance communication, share practical experience, and promote them to organize and guide project xi. Students should share the results of cooperation and promote them to complete the project learning in a deeper way.

The Theoretical Basis of Project-based Learning. In China, project-based learning method was introduced in 2001, and its main application fields include vocational education, higher education and other research and practice. This teaching mode integrates many teaching ideas and is mainly based on constructivism theory and multiple intelligence theory.

The theory of constructivism holds that "knowledge is actively constructed by the cognitive subject, and construction is realized through the interaction of new and old experiences. The function of cognition is adaptation, which helps the subject to organize the empirical world". That is, the world exists objectively, and the knowledge acquired by learners is the personalized knowledge reconstructed under the guidance of others and combined with personal experience and understanding. Students should not only accept passively, but also become the center of teaching and the subject of cognition, and construct their own knowledge system through constant exploration. Project-based learning model is based on this educational theory, emphasizing students' learning initiative, the authenticity of project design, and the guidance of teachers' process. The role of teachers has changed from traditional professors to organizers and instructors. The teaching method changed from lecturing to guiding students to discover, analyze and solve problems, and to actively construct and improve their own knowledge and experience through certain difficult practical projects to form personalized cognition. According to the theory of multiple intelligence, human intelligence is multiple, including logical intelligence, linguistic intelligence, spatial intelligence, motor intelligence, rhythmic intelligence, self-reflection intelligence, interpersonal intelligence, existential intelligence and natural observation intelligence. Everyone is different in these nine aspects. When completing the project, students will solve the problem according to their advantages and disadvantages. The knowledge used in project teaching is comprehensive. We must face up to the differences of students in the teaching process, and design appropriate projects according to their specialties and characteristics of knowledge and experience, so as to achieve the effect of enlightening wisdom and acquiring ability.

Research on Teaching Evaluation of Project-based Learning

Project-based learning has become an excellent method of teaching and learning, but many teachers do not yet evaluate learning results in project-based learning. The traditional evaluation method itself has many defects and is not suitable for interdisciplinary and multi-mode learning. In project-based learning, teachers need to encourage students' ideas and provide meaningful feedback. Project-based learning (PBL) may have more than one correct answer. Finding creative solutions that solve or drive problems is a process that makes learning meaningful and difficult to evaluate from a traditional perspective. When projects are interdisciplinary, it is also a challenge for teachers to judge subjects they may not be familiar with.

We need to evaluate many aspects of student performance in PBL. The final product is of course important, but if we focus only on this point, the meaningful learning that takes place in the whole process will lose its meaning because of the students' "achievements". The advantage of PBL is that students learn much more than textbook content. They learn how to cooperate with others, solve problems, present ideas clearly to the audience, and learn from mistakes. In other words, we need to know not only what they learned, but how they learned it so that we can evaluate these processes in

the future. Areas of assessment should include mastery of content, collaboration or participation, presentation of work or style. Other considerations may include group performance or other elements specific to your topic or project.

Project Learning Teaching Evaluation Principles. In order to make the evaluation of teaching by project learning more effective, the dynamic evaluation and static evaluation, implicit evaluation and explicit evaluation, subject and object evaluation and other factors should be fully considered in the process of project evaluation. Therefore, the evaluation process of project learning should reflect the following principles.

1. Self-evaluation principle. In the process of project learning, students should make clear what they do, how they do it, what they learn and how they learn it, whether they have mastered relevant knowledge and principles in the whole process, and whether they solve relevant problems through thinking. All these are the basis of students' self-evaluation and also the basis of project learning evaluation.

2. Mutual evaluation principle. Project learning itself is a cooperative learning process. In the process of project evaluation, while students' self-evaluation is the basis, they should also actively carry out intra-group mutual evaluation and inter-group mutual evaluation activities, so as to make the evaluation of teaching more objective.

3. Principle of combination of process and summative evaluation. In project learning, students are required to improve their self-quality in the process of completing the project, and the principle of combining process evaluation with summative evaluation should be emphasized in the project evaluation. The whole project works are the motivation for students to carry out experimental project activities. We should pay attention to the improvement of students' knowledge, skills and innovative thinking during the completion of the project.

The Steps of Project Learning Teaching Evaluation. The goal of teaching evaluation is to obtain an effective and reliable feedback to help teachers and students understand the degree of achievement of teaching objectives and to serve as the basis for subsequent decisions, follow-up guidance and rating.

Therefore, it is very important to develop a practical and feasible project evaluation plan that takes into account all aspects. Conduct effective project evaluation on the project works that conform to the standard. Project works can be completed PPT presentation, exhibition, model, role play, etc. During the evaluation of the design work, we should make sure that each learning objective is evaluated. During the implementation of the project, we should make phased works and set checkpoints to provide feedback to students. It also provides students with the opportunity to show their knowledge and skills through the project works.

Before designing the project evaluation, we need to decompose the knowledge and skills into a clear description of the learning objectives. These descriptions of objectives provide the basis for the implementation of the evaluation process and provide direction for what students should learn. In the case of role play, let's break it down. Performance requires at least three sub-skills: body language, pronunciation and intonation, and sentence transition, all of which can reflect the knowledge and skills students have mastered in the presentation of the study works.

Using evaluation table foreign scholars believe that evaluation table is a kind of evaluation guide, and a clearly designed evaluation table can distinguish students' performance of different degrees. For students, the evaluation form should be open to the public. From the beginning of the project, students know the content of the evaluation form or participate in the formulation of the evaluation form, which is more conducive to their enthusiasm in participating in activities and learning. For teachers, writing evaluation forms requires teachers to think deeply about what knowledge and skills they want students to master and apply. The more explicit the evaluation table is, the clearer the learning objective is, the clearer the task in the project is, and the more conducive it is to the production of students' works.

The Difference Between Project Learning Teaching Evaluation and Traditional Teaching Evaluation. Project learning teaching evaluation is completely different from the traditional model.

The roles of students and teachers have changed. Students gradually take responsibility for their own learning. Therefore, in addition to the evaluation from teachers, students need to evaluate their own work, including self-evaluation and peer evaluation. Such evaluation is not only the evaluation of learning results, but also the evaluation of learning as part of the learning process. Through the evaluation of oneself and others (actually, it is also a process of constructing knowledge through social interaction activities), the understanding of knowledge can be deepened and the flexible application of knowledge can be improved. In traditional teaching practice, students learn to succeed. The performance evaluation is mainly based on the direct evaluation of teachers, while the "project" teaching mode breaks through the single teaching evaluation method. Traditional teaching is only a single external evaluation, while project-based teaching evaluation is the guarantee for the implementation of project learning strategies. As an important part of project learning process, it is an important basis for judging students' mastery of basic knowledge and skills of high school physics teaching. Compared with traditional tests and tests, project learning evaluation gives students more opportunities to be independent in evaluating their mastery of knowledge. In the process of cooperative learning, independent learning and reflection learning, teachers and students themselves can make evaluations according to rich and detailed learning records or evaluation plans.

The Construction of Project Learning Teaching Evaluation

Characteristics of Teaching Evaluation Based on Project-based Learning. Project-based teaching evaluation has the following four characteristics: different traditional teaching evaluation aims focus on the evaluation of learning results, so as to grade or classify students and pay attention to the final mastery of knowledge. To evaluate learning outcomes, traditional evaluation is often summative and judgmental. Project-based learning evaluation is an evaluation method based on student performance and process, which is used to evaluate students' ability to apply knowledge to solve real problems. The focus is no longer on what is learned, but on what skills are acquired in the process. This type of evaluation is usually procedural and constructive.

Different traditional evaluation standards are mainly formulated with the intention of syllabus or course editors, so the evaluation standards for group students are relatively uniform and fixed. The project learning evaluation focuses on the students' individual learning, emphasizing the evaluation of how students learn, what knowledge they have learned, and what kind of ability they have cultivated. The teacher plays a guiding role. Therefore, the evaluation criteria are usually formulated by teachers and students according to the actual problems and students' previous knowledge, interest and experience and constantly adjusted and improved in the process of problem solving.

Students' abilities are different. In traditional teaching evaluation, students are graded or classified according to the evaluation of teachers and know whether their knowledge can reach the expected goal from the feedback of evaluation. The development of students' abilities and thinking is limited. However, with the continuous updating of knowledge, the traditional evaluation method can no longer meet the needs of effective evaluation of students' performance at each stage. Therefore, developing students' self-evaluation ability will be a necessary skill. It is an important task to cultivate students' self-evaluation ability.

The integration of evaluation and teaching process is different. In traditional teaching, the evaluation procedure is generally put in the last link, which is an isolated and final activity at the end of learning activities to grasp the final effect of learning activities or to identify and classify the grade of students' learning effect. The evaluation of project learning takes cultivating students' self-evaluation ability as one of the teaching goals. Therefore, evaluation is carried out in real learning tasks and is an indispensable and important part of the whole learning process.

Analysis of Teaching Evaluation Elements Based on Project Learning. Project learning mode in hybrid learning environment mainly refers to the learning mode that combines mobile network environment and traditional media, starts from the driving problem of real situation, and takes team cooperation to complete project works as the main form. In the process of designing

project-based learning in a mixed environment, the design of driving problems, project learning objectives, learning supports and learning evaluation are the key factors.

Design of driving problems Driving problem is the key point to start project learning.

The driving problem of project-based learning should come from real life and be challenging, which can stimulate students' interest in exploring the project. In the design of driving problems, teachers should follow the following principles: drive the problem to be able to stimulate students' interest in learning, so that students in the process of project learning to maintain interest; The driving problem should be challenging enough to stimulate students' deep involvement, rather than just focusing on the superficial phenomenon. The driving problem should be open and not easy to solve. It requires students to sort out, synthesize, analyze and critically evaluate information. Driving questions should also guide students to acquire the knowledge, skills and methods required by the curriculum standards. The driving problem should be combined with the curriculum standards to ensure that the driving problem can guide students to master the subject knowledge. The difficulty of the driving problem should be appropriate, too simple is not conducive to stimulate students' interest in exploration, and beyond their current cognitive level, students will not experience the happiness of success [1].

Design of learning objectives

When designing the objectives of project-based learning, teachers should fully integrate the requirements of curriculum standards on curriculum learning objectives with the requirements of core qualities. In other words, on the basis of complying with the curriculum standards, change the "three-dimensional learning objective" to "project-based multi-dimensional learning objective", fully consider the cultivation of students' core qualities in the 21st century, and revise and improve them in combination with the specific requirements of project-based learning. [2]

Support of learning support

Project-based learning requires students to have strong autonomous learning ability and self-regulation ability, and to use the advantages of information technology to carry out learning, which is a great challenge for students. Especially when students are not familiar with what they have learned, project tasks are challenging or students lack good self-regulation ability, if teachers' guidance and support are absent, students may feel frustrated because of many difficulties in the learning process, or deviate from the learning direction because of the lack of correct guidance. Therefore, in project-based learning, teachers should pay special attention to providing learning support for students, reducing students' sense of frustration and helplessness in the process of learning, so that they can make full use of the advantages of information technology with the guidance and help of teachers.

Guidance and participation in collaborative learning

As the problems faced by students in project-based learning are challenging and complex, they need to be completed by group collaboration, so the design of group collaboration learning is very critical. In the concrete implementation, teachers can guide students to use the relevant network collaboration platform and communication and discussion tools to enhance students' communication and collaboration. In the process of project activities, teachers, as mentors, should participate in the whole process to guide students to divide themselves into reasonable heterogeneous groups. When the collaborative group encounters difficulties, teachers should provide timely support and help to ensure the smooth and effective progress of collaborative learning, so that students can successfully complete the project tasks^[3-5].

Multiple evaluation design

In the process of project exploration, while mastering the subject knowledge, students complete the project activity tasks in the way of collaborative learning, and finally form the project works to improve their various abilities. Therefore, it is not possible to evaluate the effectiveness of students' project-based learning with the traditional performance test. The evaluation of project-based learning should emphasize the diversification of subjects, the comprehensiveness and comprehensiveness of evaluation content, the rationality of evaluation criteria, and the diversity of evaluation methods and means. In the process of designing and implementing project-based

learning, teachers should make full use of relevant evaluation tools and network learning data to provide strong support for self-assessment, mutual assessment and teacher assessment in project-based learning^[6].

Teaching Evaluation Method Based on Project Learning. Process evaluation is a theory put forward by professor Scriven of Harvard University in 1967 in evaluation methodology. B. s. Bloom, a famous American psychologist and educator, first introduced it into the field of teaching. Process evaluation refers to the evaluation of the effect of teachers' teaching and students' learning in order to guide teaching correctly and effectively in the process of learners' active construction of knowledge. It can help students grasp the learning situation, improve their self-recognition level, and adjust their learning plan and direction. Through this evaluation mechanism, teachers can timely adjust teaching contents and teaching methods and implement teaching diagnosis. Process evaluation is an evaluation method based on the theory of constructivism. In the 1960s, the Swiss psychologist piaget put forward the constructivism theory, whose main idea is that the development of human psychology, thinking and intelligence is the result of assimilation and adaptation with the social and cultural environment. Learning is not a process in which the teacher imparts or inculcates knowledge, but a process in which the learner interacts with the surrounding environment, USES necessary learning materials with the help of others, and forms an understanding of the external world through meaning construction. Constructivist teaching theory emphasizes the evaluation of the process of knowledge construction, which provides a theoretical basis for the process evaluation.

Compared with the summative evaluation, the process evaluation presents the following characteristics: first, the dynamic evaluation process: summative evaluation generally summarizes and evaluates the learning and working conditions of the evaluation objects in a period with the help of one-time results detection after a relatively complete time stage. The process evaluation takes the performance of the evaluation object in the learning process as the main content of the evaluation. The current situation of the evaluation object and the process of its development and change are included in the evaluation scope. The evaluation changes from one evaluation to multiple evaluation, showing dynamic characteristics. The second is the diversification of evaluation content: summative evaluation focuses on examining students' knowledge and information, possession and use of simple skills. Process evaluation places the evaluation object in an open and complex real situation to provide relevant knowledge and skills. It focuses on examining students' ability to use knowledge and skills to complete tasks in various real situations, as well as related non-intellectual factors. Third, the openness of the evaluation standard: the traditional summative evaluation is not suitable for the content of the evaluation, which requires the evaluation object to make systematic preparation for the content to be evaluated within a period of time. The process evaluation establishes clear and clear evaluation criteria before the evaluation activity. Students know the tasks to be completed and the specific evaluation criteria before the learning activity, and the evaluation criteria are open. Fourthly, evaluation-oriented encouragement: procedural evaluation acknowledges that students have individual differences and advocates different evaluation strategies for different students. Summative evaluation ignores individual differences of students, and focuses on performance evaluation, grade classification or talent selection through testing and evaluation. Wu is the interactivity of the evaluation subject: different from the summative evaluation in which the subject is assumed by the teacher, students can only accept the evaluation unilaterally. In the process evaluation, the evaluation task is assigned to the teacher (including the practical guidance teacher) or enterprise special personnel) and students. Students are no longer just passive subjects, but active participants in evaluation activities. Through peer evaluation and self-evaluation, students learn to find problems, draw on each other's strengths, and realize the transfer of knowledge and the improvement of ability.

By comparing the two evaluation methods, it is found that the standard of process evaluation is generally not as clear as the summative evaluation and is not so conclusive, but it can objectively present the actual situation of the educational process, the evaluation object has a clear track of vertical development, and the evaluation focuses more on the improvement of students in the

learning process. Moreover, the process evaluation focuses on the whole field of students' learning experience, and believes that all valuable learning results should be affirmed by the evaluation, focusing on the improvement of students' comprehensive quality. Students participate in teaching activities as evaluation subjects, and evaluation standard is no longer a standard or a "ruler". More "ruler" means more good students, only to achieve the evaluation of the way of multiple interaction, so that every student has the opportunity to become excellent, so as to mobilize the enthusiasm of students learning.

Problems that Should be Paid Attention to in Teaching Evaluation Based on Project-based Learning

The Determination of Teaching Evaluation Scope of Project-based Learning. The scope of evaluation content more.

Both process and resultFormative

Evaluation and summative evaluation complement each other. Formative evaluation refers to the timely and effective evaluation of students' learning process. Procedural evaluation can evaluate students' learning effect more comprehensively and facilitate teachers to find and make up for students' learning weaknesses in time. Summative evaluation refers to the evaluation of course learning results, which generally refers to the intensive and comprehensive examination organized by the school at the end of each semester. Teaching evaluation should be the unity of process and result, emphasizing both the process generation in teaching and the goal realization after teaching. Summative evaluation can be divided into written test, oral test and computer test. And process evaluation based on the characteristics of curriculum evaluation, also can be the difference between our university computer science disciplines, for example, can be divided into: the distinction of subject, process evaluation in attendance, classroom performance, speed, one-time accuracy for appraisal basis, the proportion for each branch office: attendance, classroom performance, operating speed by 10% 10% and 10%, one-time 70% accuracy. For design subjects, attendance, performance in the design process, design ideas and final works shall be taken as the assessment basis. The proportion of each part shall be 10% attendance, 10% classroom performance, 30% design ideas and 50% final works. Increase the proportion of process evaluation.

Put equal emphasis on ability and emotion

Modern psychological research shows that positive emotion can promote students' mastery of knowledge and the formation of ability. Project, therefore, the design of the teaching evaluation not only follow the principle of "close to the students", and more to "close to life," "reality", combining knowledge, ability, emotion, attitude and other factors, the development of science and objectively evaluate the students' learning ability, such as the ability to collect and process information, acquire new knowledge ability, the ability of critical thinking, and emotional attitude, such as learning interest, learning attitude, learning will. In addition to academic performance, we should also attach importance to the development of students' other potentials and traits, especially the development of their exploration and innovation ability, cooperation ability and practical ability. Through the evaluation of emotion field and the promotion of non-intellectual factors to intellectual factors, the role of encouraging and guiding in teaching evaluation can be brought into full play.

Integration of individual and whole

Project teaching is a typical "group cooperation" type of mutual assistance teaching activities, in the learning process, students through the division of responsibility, mutual help and mutual benefit to complete the common task, in the process of completing the common task to achieve personal ideal. In project teaching evaluation, teachers should organically combine individual evaluation with group evaluation, take "seeking not everyone's success but everyone's progress" as the ultimate goal of teaching evaluation, turn the competition among individuals into the competition among groups, and form the pattern of intra-group cooperation and inter-group competition. We should not only pay attention to the individual development of students and the degree of individual efforts, but also pay attention to the evaluation of group groups, and encourage individual competition to reach the standard and turn to public cooperation to reach the standard. In the evaluation process, various

honorary awards can be established according to the performance of students in the group, which can be innovated in a variety of ways to promote the enthusiasm of students in participating and the sense of honor of the group, so as to promote "project cooperative learning".

The Determination of the Subject of Project Learning Evaluation. The three-dimensional evaluation subject requires multi-channel, multi-angle and multi-level investigation of the evaluation object, and the establishment of students, parents, teachers, managers and other evaluation subjects who jointly participate in and interact with each other, enhance the interaction among evaluation subjects, and inspect the development status of evaluators with multi-angle feedback information.

Learning self-evaluation is an important part for students to recognize themselves, learn to learn and improve their comprehensive qualities. However, in the previous project teaching, teachers often ignore the dominant position of students and still use the individual vision to judge and measure students, so that students can not correctly examine themselves, can not clearly see their own progress and problems. Therefore, teachers should change the evaluation status of "students accept passively and teachers are the absolute subject", let go and improve students' self-evaluation awareness and reflective ability, and help students objectively analyze their advantages and disadvantages, strengths and weaknesses. In the self-assessment to promote students to constantly know themselves.

Students are always the subject of learning evaluation and group activities. The mutual evaluation should be based on the results of the self-evaluation. Self-evaluation requires objectivity, fairness and seeking truth from facts. Group mutual evaluation attention to learn from each other, is a "help" word. In the process of mutual evaluation and interaction, students will unconsciously regard the strengths of others as their own the goal of your own efforts, the shortcomings of others as a mirror to check their own. In the process of transmitting and exchanging evaluation information, I helped team members to make progress, and improved my skills and qualities through subtle integration. Therefore, students' mutual evaluation is not only an activity to check one's learning situation, but also a process for everyone to learn from each other, learn from each other's strengths, cooperate with each other, improve together, and achieve the teaching optimization.

Teachers are the organizers of the classroom and the authoritative evaluators in the evaluation activities. The purpose of teacher evaluation is to regulate students' learning emotions and stimulate their learning potential. Therefore, it is particularly important to grasp the accuracy of evaluation and try to be natural, unpretentious, concise and just right. It is necessary not only to fully affirm the progress of students in their studies, but also to point out their shortcomings in the process of growth. Positive progress requires seeking truth from facts, appropriate; Point out the shortcomings, apply the motivational language expression, the existing problems and the direction of efforts combined. In a word, teachers' evaluation of students' learning must be fair, just, objective and targeted.

Processing and Analysis of Evaluation Results. On the processing and analysis of project-based learning evaluation results, it should be noted that "learning is not a process of transferring knowledge from teachers to students, but a process of cognitive construction in which individuals actively interact with new knowledge". [2] Scientific evaluation results processing can effectively promote the connection between evaluation and learning. [2] research also shows that the analysis and feedback of evaluation results processing will have a very direct impact on students' learning content, choice of learning behavior and daily performance. If teachers emphasize the reproduction and re-recognition of knowledge, students will take the form of passive acceptance of learning, relying on mechanical memory; If teachers emphasize the importance of homework and performance, students will pay more attention to the learning process. If the teacher emphasizes the uniqueness of the answer, the students will ignore the more extensive extracurricular knowledge learning, and take the book as the whole content of learning. At the same time, in the processing of evaluation results, maintaining continuous "achievement expectations" for students according to training objectives or teaching objectives can also play a very important role in the progress of

students. Unfortunately, due to the imperfection of the traditional evaluation result processing mechanism, these functions have not been effectively played.

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