

# Interdisciplinary Learning Evaluation in Primary Schools: Value and Strategy

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**Abstract:** With the new curriculum reform, interdisciplinary learning is the trend, and it is necessary to establish an efficient and objective interdisciplinary learning evaluation system. On the basis of discussing the necessity of interdisciplinary learning evaluation under the background of the new curriculum standard, this paper analyzes the existing difficulties of interdisciplinary learning in primary schools, and puts forward the strategies of constructing an interdisciplinary learning evaluation system guided by core literacy, designing diversified evaluation, paying attention to performance evaluation, giving priority to encouragement, promoting reflection and development, and paying attention to students' evaluation and feedback, so as to provide reference for the evaluation of interdisciplinary learning in primary schools under the background of the new curriculum standard.

**Keywords:** Interdisciplinary Learning, Learning Evaluation, Primary School Stage

## 1. Introduction

In order to adapt to the needs of the development of the times and promote the improvement of students' interdisciplinary problem-solving ability, the new curriculum standard of 2022 version puts forward interdisciplinary learning for the first time, so as to strengthen the correlation between disciplines, drive the comprehensive implementation of the curriculum, and strengthen the practical requirements. The new curriculum standard lists interdisciplinary learning as a learning task group, which shows the significance of interdisciplinary learning in basic education. At the same time, carrying out interdisciplinary learning undoubtedly puts forward higher requirements for subject teachers: on the one hand, teachers should be able to design high-quality interdisciplinary learning activities, on the other hand, they should also be able to implement and guide interdisciplinary learning with high quality. The measurement of the quality of interdisciplinary learning process and results depends on the evaluation, which has an important goal oriented and leading role, and is the guarantee of carrying out high-quality teaching activities; Therefore, interdisciplinary learning evaluation is the first task to be tackled in interdisciplinary learning.

### 1.2. The Value of Interdisciplinary Learning Evaluation

Clarifying the value and orientation of interdisciplinary learning points out the direction for the evaluation of interdisciplinary learning, and reasonably carrying out interdisciplinary learning evaluation is the premise of carrying out high-quality interdisciplinary learning [1,2].

#### 1.1.1 The Fundamental Guarantee for Objectives

Evaluation provides the possibility for monitoring the quality of interdisciplinary learning, and it is an important guarantee for the implementation of interdisciplinary teaching objectives. First of all, the development of interdisciplinary learning activities needs evaluation as the goal guidance. Interdisciplinary learning cannot be a learning without goals and activities for activities. To judge whether interdisciplinary learning activities meet the requirements of goals must rely on evaluation. Secondly, evaluation is an important starting point to measure the achievement of interdisciplinary learning goals, which provides the possibility to evaluate the quality of interdisciplinary learning. With the development of interdisciplinary learning activities, the extent to which students' interdisciplinary literacy has been improved and whether students are closer or farther from the goal need to be evaluated and measured. Finally, the evaluation standard of interdisciplinary learning is the action guide for teachers and students to carry out interdisciplinary learning. Interdisciplinary learning based on evaluation criteria is a prepared, planned and purposeful learning, and teachers' and students' teaching decisions can be more reasonable and based. With the rapid development of science and technology and the acceleration of social change, the value of science

education is not to pass on deterministic knowledge to students, but to take knowledge as a way for students to understand the world in order to deal with the dynamic changes and complex challenges in the uncertain world. This idea needs to be implemented in the practice of interdisciplinary learning, and the corresponding evaluation criteria need to be constructed to realize it.

### 1.1.2 The Important Guide for Designing

Evaluation provides the direction for the design of high-quality teaching activities and is the lighthouse to guide the teaching design. Reverse instructional design is a kind of instructional design mode that puts students' evaluation first, which was proposed by Wiggins et al. The traditional teaching design sequence is teaching goal setting, teaching process design, and evaluation design. This kind of teaching design process is prone to produce two kinds of teaching misunderstandings: "activities for activities" or "indoctrination learning". The order of reverse instructional design is to determine the expected results (instructional goal design), determine the appropriate evaluation evidence (student evaluation design), design learning experience and teaching (instructional process design). By putting the design of student evaluation in front, teachers give priority to the evaluation standards that students need to achieve, and then make evaluation an important bridge connecting teaching objectives and teaching process, so as to avoid inconsistency among objectives, teaching and evaluation. Evaluation plays an important role in the concretization and detectability of teaching objectives, and is indispensable for the guidance of teaching process design. Interdisciplinary learning evaluation can provide more clear guidance for the design and implementation of interdisciplinary learning activities. Interdisciplinary learning without evaluation will become learning without goals and directions, and its final result can only be formal, invalid and meaningless learning. With the bridge and link function of evaluation, starting from the end, it can better guide interdisciplinary learning and ensure the quality of learning.

### 1.1.3. The Key of Improvement

Evaluation can provide necessary feedback information for the development of interdisciplinary teaching, and it is an important starting point to promote the improvement of interdisciplinary teaching. The implementation of interdisciplinary learning evaluation can feed back the students' learning status and the degree of interdisciplinary literacy development. Interdisciplinary learning evaluation includes not only the final summative evaluation, but also the process evaluation. Among them, process evaluation can reflect the performance and development of students in different teaching activities, and these feedback information plays an important role in the optimization of teachers' teaching process. Interdisciplinary learning evaluation not only plays an important role in adjusting the pace of teaching and optimizing the teaching process, but also serves as an external indicator to feedback students' learning situation, so that students can see their performance level and clarify the direction of efforts; Therefore, it also provides the possibility to promote students' reflection, develop metacognition, adjust learning strategies, and optimize the learning process.

## 2. The Dilemma of Interdisciplinary Learning Evaluation in Primary Schools

At present, the interdisciplinary learning evaluation in primary schools is facing multiple practical difficulties, and its core contradiction lies in the structural dislocation between the traditional evaluation system and the interdisciplinary education goal. In terms of standards, interdisciplinary learning emphasizes knowledge integration and ability transfer, but the existing evaluation indicators are still based on the separation of disciplines, which is difficult to scientifically quantify the literacy level of students' comprehensive use of multidisciplinary knowledge to solve real problems.

### 2.1. *Integration of Evaluation Contents*

Interdisciplinary learning is characterized by comprehensiveness and complexity. An interdisciplinary learning activity usually contains two or more subject contents. When setting interdisciplinary learning goals, some teachers simply superimpose the single subject goals of these disciplines. Teaching evaluation is based on teaching goals. Therefore, the evaluation of interdisciplinary learning is equivalent to the superposition of single subject evaluation. Such evaluation content is fragmented and ineffective. It can not

really combine various disciplines and carry out comprehensive evaluation, which will not achieve the ultimate goal of interdisciplinary learning, resulting in insufficient correlation between disciplines, inadequate implementation of curriculum integration, and substandard practical requirements. The teaching of interdisciplinary learning requires in-depth integrated teaching, emphasizing situational themes, real problem solving, and interdisciplinary project learning. The design of interdisciplinary theme teaching scheme is different from the class hour teaching design of a certain discipline. In the actual teaching, because there is no teaching reference book, the design of teachers' interdisciplinary theme teaching scheme mainly relies on collecting content data from the network for processing and sorting. In this design process, it is easy to forget the curriculum standards of various disciplines. It is difficult to combine the cultivation of the core literacy of disciplines with the design of teaching objectives, and it is also difficult to design operable evaluation methods in teaching evaluation. In addition, in the process of designing interdisciplinary thematic teaching programs, although a program design team will be established, the team members tend to complete the tasks of different sections based on division of labor, and there are few components of cooperative design by teachers of different disciplines. Therefore, in terms of evaluation content, the new curriculum standard emphasizes the promotion and development level of students' core literacy. The first is to evaluate the core quality of students' participation in practice. For example, interdisciplinary thematic learning of natural sciences and Humanities and Social Sciences requires the evaluation of students' common qualities in various disciplines, such as scientific concepts, scientific thinking, historical materialism, family and country feelings, etc; It is also required to evaluate interdisciplinary literacy such as the ability to use multidisciplinary knowledge, critical thinking, problem-solving ability, information collection and processing ability, teamwork ability, and emotional values and attitudes.

## *2.2. The Unity of Evaluation Subject*

In the interdisciplinary activities of primary schools, the subject simplification of teaching evaluation can not be ignored. Often in activities, most of the subjects of evaluation are teachers, and sometimes students' self-evaluation and mutual evaluation are added. The subjects of timely evaluation are teachers and students, but it is obviously not enough for interdisciplinary activities. The evaluation of single subject will weaken the development of students' comprehensive quality. Interdisciplinary pedagogy aims to cultivate students' interdisciplinary thinking ability, problem-solving ability and innovation ability. However, if the evaluation only focuses on subject achievement, students may pay too much attention to the mastery of subject knowledge and ignore the development of other aspects. This will affect the cultivation of students' comprehensive quality and limit their ability and interest to develop diversity. Secondly, the simplification of the evaluation subject easily leads to the rigidity and homogeneity of school education. When both teachers and students are excessively pursued for academic achievement, an examination centered education model will be formed. Teachers may overemphasize test taking skills and knowledge inculcation, and lack the cultivation of students' innovative thinking and practical ability.

## *2.3. Mechanization of Evaluation Process*

Due to the immaturity of physiology and psychology, primary school students have great uncertainty. In order to avoid trouble, primary school teachers "coincidentally" implemented unified and mechanized classroom evaluation. The teacher first asks questions in class according to the preset. After the students answer the questions, the teacher only uses simple comments to dismiss the students, ignoring the comprehensive evaluation of the students, so as to directly start the next teaching. This is a kind of classroom evaluation process led by teachers and students' mechanical response. Such primary school classroom evaluation is a fixed and lifeless mechanical operation, which cannot reflect the ideological collision and active atmosphere that the classroom should have. Piaget's cognitive development theory points out that individuals have the same thinking ability and level as adults after the age of 11. Although primary school students still have some thinking limitations, the process of classroom evaluation should not only be a superficial form, but also show its essential connotation - serving primary school students, stimulating their potential, and promoting the growth of their thinking in the real classroom evaluation.

## **3. Strategies for Interdisciplinary Learning Evaluation in Primary Schools**

As the "baton" in education, scientific evaluation is an important means to test whether the learning objectives have been achieved and to lead teachers and students to reflect and progress. The evaluation of interdisciplinary thematic learning should be based on its own characteristics, adhere to the guidance of core literacy, build a systematic and comprehensive interdisciplinary learning evaluation framework, and pay attention to the accuracy and development of the evaluation.

### *3.1. Construction of Evaluation System*

Today, with the explosive renewal of social resources and the rapid change of communication forms, it is difficult to follow the pace of the times to change and progress if we still adhere to the discipline based idea. Facing the difficulties of teaching innovation, it is necessary to boldly break the discipline barriers and build an interdisciplinary learning evaluation system based on the cultivation of primary school core literacy. This not only plays an important role in the key stage of the new curriculum reform, but also has important significance for the efficient integration of curriculum resources of various disciplines and the improvement of students' ability to apply knowledge in the real situation. To build an interdisciplinary evaluation system based on students' core literacy, we need to clarify where the core points of two or more disciplines are related, and find the internal logic and exploration theme of interdisciplinary learning between primary and secondary schools in a certain course. This means that only having a single subject knowledge, viewpoint or thinking can not achieve this teaching goal. Teachers of all disciplines need to integrate thinking based on the cultivation goal of students' core literacy, carefully select and design course themes and contents, so as to present a natural and beneficial course for students' absorption. Secondly, the interdisciplinary evaluation system needs to form a unified evaluation standard, and the nature differences and development differences between disciplines need to be reasonably weakened, so as to extract the curriculum commonalities and convergence points among the disciplines in primary schools, and use scientific methods to build a fair and reasonable evaluation system. Third, the key of this interdisciplinary evaluation system is to improve the core literacy of students' training objectives and improve the interdisciplinary comprehensive discipline literacy. On this basis, how to find and form learning tasks that are driven, but will not be complicated and overlap too high is a problem that needs to be considered and solved.

### *3.2. Design Diversity Evaluation*

In interdisciplinary thematic learning activities, multiple evaluation can better understand students' learning status and provide basis for students' growth and development. Diversified evaluation includes multiple evaluation subjects, contents and tools. In addition to teachers and students, parents, experts and social groups can also participate in the evaluation. As the evaluation subject, teachers can evaluate students' performance from a professional perspective by observing, recording and analyzing students' learning process. As the subject of evaluation, students embody the teaching design concept of student center, including students' self-evaluation and mutual evaluation, which can stimulate students' subjectivity and potential, and make the evaluation more comprehensive. Parents, experts and social groups, as the evaluation subjects, can evaluate from different angles, so that teachers and parents can fully understand students. In terms of evaluation content and tools, we should organically combine the process evaluation and summative evaluation, and run the performance evaluation through it to comprehensively investigate the students' learning situation. Process assessment is mainly aimed at students' process performance and phased results, which can make up for the complexity and incompatibility of interdisciplinary subject learning. On the one hand, teachers can design scales or rubrics corresponding to performance tasks, adopt the design idea of pre evaluation, clarify the evaluation indicators, the corresponding level and specific performance, and enhance the scientificity and integrity of evaluation; On the other hand, it can be evaluated according to the students' performance in the activities, as well as the completed posters, research reports, interdisciplinary learning assignments and other learning achievements. Students' growth can also be recorded by means of portfolio and concept map evaluation. Summative assessment is mainly for students' final learning outcomes. Teachers can design final performance tasks or final outcome assessment to promote students' summary and reflection.

### *3.3. Promote Reflection and Development*

In the task group of interdisciplinary learning, the new curriculum standard emphasizes that evaluation is mainly based on encouragement, fully affirms students' discovery and creation, and guides students' self reflection and improvement, so as to improve the quality of interdisciplinary learning. Students' learning tasks in interdisciplinary thematic learning activities are more complex than those in a single discipline, which need to be thought and solved by comprehensively using multidisciplinary knowledge. Therefore, when evaluating students, we should pay more attention to students' consciousness, attitude and ability in the process of learning, encourage students through evaluation, and enhance students' self-confidence. At the same time, teachers can design diversified evaluation activities to provide students with opportunities for exchange and reflection, guide students to review their performance in the whole interdisciplinary theme learning activities, fully affirm their own advantages, reflect on their shortcomings, understand themselves more comprehensively and objectively, and clarify the direction of improvement. Teachers can also encourage students to learn from others' learning and thinking styles in interdisciplinary thematic activities, learn from examples, promote development through evaluation, and accumulate strength for future interdisciplinary learning.

### *3.4. Follow-Up Learning Feedback*

The object of the learning evaluation system is students. Therefore, when constructing an interdisciplinary learning evaluation system based on students' core literacy, we should adhere to the basic idea of "from students to students", and actively refer to students' feedback and opinions on the complete evaluation system. Students' ideas can be collected through wechat, questionnaires, teacher-student discussions and other ways to better improve the evaluation system and supplement deficiencies. Primary school is an important stage of basic education, and its core literacy plays a vital role in students' lifelong sustainable development. Today, with the rapid integration of social information, it is very necessary to establish an interdisciplinary curriculum training system between various disciplines in primary schools and improve the interdisciplinary evaluation system based on students' core literacy. Seeking a more efficient and scientific way to evaluate interdisciplinary learning and building a more perfect and fair interdisciplinary learning evaluation system can expand the application field of students' knowledge, master the ability to find and solve problems in the real situation, and help students develop healthily in all directions and from multiple angles.

## **4. Conclusions**

As an important part of the classroom teaching process, teaching evaluation must establish the evaluation with the goal of students' development, so that interdisciplinary learning activities can truly highlight the significance of teaching. Therefore, in teaching activities, teachers must be student-centered, conduct interdisciplinary learning evaluation in a more efficient and scientific way, and build a more perfect and fair interdisciplinary learning evaluation system, which can expand the application field of students' knowledge, master the ability to find and solve problems in the real situation, and help students develop healthily in all directions and from multiple angles.

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