

Learning Scheme Reconstructs the Logical Mechanism of Teaching and Learning

Linjiao Chen^a, Jihong Li^b, Jijun Ma^c, Yuhang Yang^{d,*}, Jinjing Ma^e

Department of Education, Yunnan Normal University, Kunming, Yunnan, China

^a964164601@qq.com, ^b3577014668@qq.com, ^c1376509213@qq.com,

^dyynnuyangyuhang1998@163.com, ^e178829249@qq.com

**Corresponding author*

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Abstract: A learning scheme is a lesson in which the teacher designs and demonstrates the learning process of "how students learn" in a classroom lesson around a specific unit of study (topic, text, or unit), starting with what students are expected to "learn" so that learners construct their own or socially constructed experiences or knowledge. Unlike lesson plans and learning plans, academic plans are always student-centered, with the student as the primary subject of instructional activity and the teacher playing a guiding role. Learning solutions are more about documenting the process from learning to learning, including elements such as topics and lesson time, learning objectives, assessment tasks, learning processes, tests and assignments, and post-learning reflections. When designing learning solutions, we should follow the principles of goal, subjectivity, process and evaluation, and design solutions that facilitate teachers' teaching and students' learning, as well as the "teaching-learning-assessment" trinity.

The Learning Scheme includes the essential knowledge and skills that need to be acquired, as well as the ways and means to acquire them, and is developed by teachers for their students based on teaching and learning. The Learning Scheme comes from a reconceptualization of the teaching profession. The essence of learning is a continuous change in the depth or breadth of experience, i.e., the process by which individuals form new experiences through independent or social constructs based on their previous experiences. [1] Teachers must be mindful of how they teach and how their students learn when preparing lessons, and make the two organic. Unlike lesson plans and lesson plans, Learning Schemes are designed from the standpoint of the learner, so that teachers can clearly observe the learner's thinking process, help the learner move from "learning" to "understanding," and help the learner move from "learning" to "understanding" according to different abilities. This allows teachers to clearly observe learners' thought processes, help learners move from "learning" to "understanding", and complete a second transition of information based on the ability of the learners. With the academic calendar, teaching is no longer a one-man show for the teacher, but rather the teacher becomes a participant and observer in the classroom, shifting the focus from "teacher talks, students listen" to facing scaffolding when students face obstacles, and students truly become the masters of the classroom.

1. The difference between an academic calendar and a study plan or lesson plan

1.1. The difference between academic and study plans

The school plan is a learning aid program used to guide students' learning. At present, most school teachers use a copy of the teaching content, or even a simple list of lecture points. [2] In terms of position, "learning plan" and "guidance plan" both focus on what learners should learn, but pay little attention to objectives, students' learning methods and learning feedback, which is a content position. In contrast, "learning program" is a student's position, emphasizing the whole process of learning. In terms of evaluation methods, "learning plan" and "guiding learning plan" are both based on paper and pencil tests. In the classroom, after the teacher finishes the class, the questions that need to be completed by the students are taken as the assessment task, and then the students' learning situation is tested by the questions after class. The assessment task of the academic calendar is placed before the students' learning process as a separate part, which is more specific and easier for students to understand, so that they can clearly know the tasks they need to complete through learning before learning. By using the teaching calendar, students can highly integrate assessment and learning, so as to implement the consistency of "teaching, learning and evaluation."

1.2. The difference between learning solutions and lesson plans

Teachers basically use lesson plans when preparing lessons and in class. They are not familiar with lesson plans and have little contact with them. Although both learning plans and teaching plans are prepared by teachers, there are essential differences between them. The teaching plan is the teaching plan and content prepared by the teacher before the lecture, generally including the subject, the requirements of the curriculum standard, the teaching objectives, the teaching focus, the teaching difficulties, the teaching methods, the teaching aids, the blackboard design, etc. [3] The teaching plan is a teaching implementation strategy designed by teachers from the perspective of classroom teaching according to the curriculum standards and students' learning conditions, focusing on the use of teaching forms and methods. The learning plan is prepared from the perspective of learners, from the standpoint of how learners achieve effective learning, on the basis of fully understanding the regularity, scientificity and diversity of students' learning, and more attention is paid to how students learn. From the perspective of components, the learning plan has more assessment tasks and learning processes than the teaching plan, as well as tests and assignments that need to be completed by students after class, as well as reflection after learning. Teaching plan design is the preparation plan for teachers' teaching, while learning plan is the cognitive process of students' learning. The learning plan is not a complete negation of the traditional teaching plan, but a concentration and sublimation of the teaching plan. The learning plan puts more emphasis on learners' autonomous construction process, and visualizes the learning process, which helps learners find their own learning methods and cultivate their own abilities in the process of autonomous guidance and management.

1.3. Summary of this chapter

The academic calendar is a reform of the traditional teaching program. It changes the "teacher's position" of traditional teaching programs and the "content position" of learning programs, realizes the transformation from teacher-centered to student-centered, and reflects the concept of student-centered education. The academic calendar takes students' "what they learn" as the starting point, focuses on "how they learn", and takes "how well they learn" as the ending point. The characteristic

of the academic calendar is the word "calendar", which is a cognitive journey prepared for students' learning. It focuses on students' learning process and solves the problem of "how to learn". The entire teaching process of the learning solutions is designed around how students learn, and all elements of the program design point to students' "learning" and each student's "learning". A complete curriculum consists of topics and lessons, learning objectives, assessment tasks, learning supplies, and learning processes. The most important feature of the learning solutions is that it has assessment tasks to test students' achievement of the learning objectives, which can help teachers understand the effectiveness of students' learning in time, and thus achieve the purpose of effectively regulating classroom teaching. In the learning solutions, teachers always regard students as the main body, and record the performance, harvest and experience of each student in the teaching situation created by the teacher, which is the carrier of teacher-student and student-student interaction.[4] The teacher plays a guiding role. After the completion of the phase, students can reflect on their own learning journey and realize self-evaluation of learning quality.

2. Principles of designing academic cases

2.1. Targeted principle

Teachers should provide clear and specific learning objectives for what students are about to learn. The learning objectives of an academic calendar are the results that students expect to achieve through the learning process. They are both a guiding light for students' learning and a reference for teachers to evaluate their teaching. When describing the learning objectives, the academic calendar should be based on the requirements of the curriculum standards, the understanding of the content of the textbook and subject knowledge, and the actual situation of the students, and the learning objectives should be specific and realistic. The curriculum standards are the specific educational objectives, and the learning objectives reflect the requirements of the curriculum standards, which are the basis and key for teachers to determine the learning objectives. The "curriculum standards" reflect the will of the state and the goals of discipline education. The focus of designing learning objectives in academic calendar is how to "concretize" and "process" the abstract educational purposes, and to fully reflect the professionalism of teachers in the design process. Ausubel said, "The most important factor affecting learning is what students already know, and teaching is based on that." The learning objectives of the academic calendar should meet the requirements of the curriculum standards while taking into account the students' knowledge, cognitive stage, and teacher professionalism. Scientific learning objectives guide students to know "where I'm going" and "how I'm going to get there" and to think about "what I'll get out of going there. In addition, learning objectives should be testable so that students can think about questions such as "Where did I get to," "Did I go right," and "Why did I go wrong?"

2.2. The principle of subjectivity

It is designed for students to "learn" to learn by focusing on their cognitive characteristics and possible problems. The learning process in the academic calendar includes three modules: student activities, teacher activities, and learning assessment. Student activities refer to the learning process of the learner, i.e., the learning path that the student takes from the beginning of the learning process to the completion of the learning process. Teacher activities are the teaching situations created by the teacher to assist students in successfully completing their learning tasks and carrying out learning activities to evaluate and provide feedback on student learning. Learning assessment is the process by which the teacher assesses the student's mastery of knowledge. Student activities focus on how students learn, teacher activities focus on how teachers can help students learn

effectively, and learning assessment focuses on how well students learn. All the elements point to students' learning and put students in the main position. The learning solutions is student-centered, and the teacher thinks about teaching from the learner's point of view, and records the whole process from not knowing to knowing, from applying to analyzing, from evaluating to innovating, based on the stimulation of the learner's existing knowledge and experience; it records the learner's cognitive process, the pulse of thinking, the bottleneck they will face, and the summary reflection after breaking the bottleneck. All the processes can be visualized through the academic case. The academic case has an embodied effect, allowing the learning process and evaluation process to leave a unique imprint on each student and to bring home the learning experience from the classroom. Teachers can communicate and dialogue with their students through their portfolios, provide them with sufficient learning resources, and set reasonable learning tasks so that students can become the real protagonists in the classroom through their portfolios. The learning process is based on the students' ability to learn on their own, with the teacher acting as a spectator, reminding and assisting the students when they have problems in using the program.

2.3. The process principle

It is important to highlight the process of learning before, during, and after class, as well as after students' learning, and to record students' gains and confusions in a timely manner. The learning content of the academic calendar starts from the learner's perspective of teaching, inducing the learner to participate, acquire learning methods, and construct knowledge points independently. They are required to learn before the lesson, and the learning solutions is designed to provide them with a little bit of difficult knowledge to stimulate their learning initiative, stimulate their learning potential, break through their "nearest development zone", and enter the next stage of development. In the "Learning in the Classroom" section of the curriculum, teachers are required to put themselves in the shoes of the learners by describing the elements of learning (the subject of the activity is the learner) and giving them goals, directions, and pathways for learning. This design helps learners to determine their own way forward so that they can actively, actively and deeply engage in the learning process. In the learning solutions, learners' review after class includes not only the effective digestion and accumulation of knowledge in the book, but also the review of learning files and academic reflection activities. The learning file is reusable for the learners, and the learning solutions also becomes the focus of learning effectiveness check, recording the learners' achievements during the learning period. Students' reflections help them to take stock of what they have learned, their learning status, and their learning outcomes for re-reflection and re-examination, and thus promote deeper learning. Through this kind of thinking training, students can form a complete "knowledge base". The three learning stages are interlinked, layered and deepened, so that they can effectively ensure the completion of their academic tasks step by step in a continuous learning process.

2.4. The evaluative principle

Evaluation is a check to check the completion of students' learning objectives. Through the evaluation, we can check the completion of the learning objectives of students, so that we can know whether they have completely learned, how much they have mastered, and what parts of the sea have not been completely learned, and provide the basis for teachers' educational decisions. The evaluation system is a reasonable link between the academic objectives, the learning process and the academic testing process, and plays the role of a bridge and a link between the top and the bottom in the whole learning solutions, which is the soul of the whole learning solutions. Therefore, the learning solutions should be designed on the basis of learning activities, and the task of

evaluation should be naturally embedded in the learning process, and the evaluation process should be an important part of the whole academic process. The evaluation process is an integral part of the whole academic process. The students' learning status is evaluated in a timely manner, and they learn a period, evaluate it, and then learn another period, evaluate it again, and solve problems through diagnosis. An effective assessment task must meet the following criteria: it is highly relevant to the educational goals, feasible, and fully mastered by the learner. When designing an assessment objective, it should be based on three elements: the problem situation, the task objective, and the content of the key points, so as to create a problem situation that fits the learners' experience and motivates them to actively investigate and question, and thus improve the effectiveness of the assessment task. The knowledge points include both the main knowledge points to be examined in the assessment task and the methods and skills that learners must acquire, which are examined through the assessment task. Assessment tasks can also be tailored to the differences in learners.

3. The meaning of teaching by learning solutions

3.1. Promoting teachers to teach

When teachers prepare lessons, they prepare the material, students, and teaching methods. Although teachers study the students' situation when preparing lessons, they do not know whether the students have really mastered the knowledge when they actually teach in class. They only find out when they are correcting homework and exams after class, and then make up for the knowledge in class. The design and use of the academic calendar is based on students' "learning" and "how to learn" as the starting and ending points, and the actual completion of the transition from "teacher-centered" to "student-centered". The teacher-centered to "student-centered" transformation. Teachers are required to further reflect on how to let students learn and know "how to learn" when preparing lessons, which not only improves classroom quality, but also helps teachers improve their teaching. The learning calendar changes the traditional way of presenting knowledge directly, and uses "resources and suggestions" to provide students with scaffolding for learning and resources, ways and means to achieve learning goals. With "Resources and Suggestions", students can plan their own routes according to their needs, just like they have a guide. With the use of learning solutions, the classroom is no longer a one-man show for the teacher.

3.2. Promote students to learning

When designing learning solutions, teachers can use the units as the basis for selecting appropriate learning content for students, and teach in a way that facilitates students' knowledge acquisition. A "unit" is different from a unit in the general sense, in this case it refers to a "unit of study", i.e. a structured whole of literacy objectives, learning content, learning situations, learning tasks, teaching time and other elements, logically organized according to requirements and specifications. The "units" are organized logically according to the requirements and specifications. These "units" are connected to the knowledge points and core elements of the curriculum, which help students to clarify the purpose of learning and understand the meaning of knowledge learning; they are conducive to establishing the connection between the learning content and the actual situation, so that students can apply what they have learned; while inheriting the advantages of the lesson design, they help learners to effectively integrate the knowledge of the whole unit, and make a holistic approach to knowledge. While inheriting the advantages of lesson design, it helps learners to effectively integrate the knowledge of the whole unit, construct and form experience of knowledge as a whole, facilitate the design of learning progression between lessons, enhance the relevance of learning between lessons, promote the continuous construction of knowledge, skills

and rules, etc., and promote the improvement of core literacy. The academic calendar should not only present students with learning objectives, but also present the learning process in its entirety, focusing on students' learning experiences as well as preserving traces of learning. The relationship between teaching, learning and assessment is clarified, highlighting the function of promoting learning and teaching through assessment. Teachers are guided to pay more attention to students' active participation in the teaching process, their level of commitment to learning and the actual effectiveness of learning, so as to ensure the achievement of teaching objectives through timely feedback and adjustment. [5]

3.3. Realize the teaching-learning-assessment trinity

The questions of "what to teach students", "how do students learn", and "how do we know that students have learned" are closely linked to the learning activities. Students "learn" through learning and know whether they have "learned" through assessment. The "teaching-learning-assessment" paradigm is followed, with teaching in the front, learning in the back, and assessment throughout. [6] The "teaching-learning-assessment" paradigm. This does not simply mean that teaching comes first and learning comes second. The student-centered learning process is the backbone, where students are taught and evaluated, and students learn to determine how teachers teach. Evaluation is then used throughout the process to regulate "teaching" and "learning" based on evaluation results. Objective, content, implementation and evaluation are the four elements of curriculum, and they are also important components of learning solutions design. The "teaching-learning-evaluation" trinity of learning solutions allows each link to guide learners to actively participate in the whole process of learning within the framework of clear learning objectives and tasks. Students can be tested and given feedback on "what they have learned", "how they have learned" and "whether they have learned". The trinity of "teaching-learning-assessment" avoids the division of teaching and learning, and the division of learning and assessment. The learning solutions encourages teachers to jump out from the traditional teaching design thinking, look at the whole situation with the vision of the curriculum, and implement the "teaching-learning-assessment" trinity in the process of preparing the learning solutions, so as to achieve efficient teaching.

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