

## Research on Target Setting of UbD Reverse Instructional Design

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### Abstract

**Distinguishing learning objectives is of direct and practical significance to teaching and evaluation. According to the curriculum standard, UbD reverse instructional design regards the expected learning results as the teaching objectives. The core idea of UbD reverse instructional design is to formulate the curriculum content around the grand concepts and core tasks. Its purpose is mainly to solve the aimless inculcation and isolated learning activities in teaching. This paper focuses on the formulation and analysis of curriculum standards, the general concept of subjects, the priority of teaching content and the determination of teaching objectives, in order to provide theoretical support for educators to understand teaching objectives.**

### Keywords

**UbD, reverse teaching design, grand concept, target.**

### 1. Introduction

Grant Wiggins and Jay McTighe, contemporary American experts in teaching reform, have been working together for more than ten years to actively advocate "Understanding by Design", or UbD for short. It is also a curriculum and teaching reform model that ASCD has tried to introduce to primary and secondary schools in recent years. There are special lectures and training courses on its official website [1]. Traditional teaching is based on the content of curriculum standards to formulate curriculum objectives, while the reverse teaching design of pursuing understanding is goal-oriented, the teaching results as the goal, and the reverse teaching design is based on the teaching results. The expected results of the existing curriculum standards, teaching objectives and the level of achievement after the completion of the curriculum can provide the basic basis for the objectives of the curriculum and the unit. Sometimes teaching objectives are not very accurate and clear, different types of goals may also appear in the classroom at the same time. Reverse instructional design has clear and clear instructions for teaching objectives, expected understanding, basic problems, and the results of students' acquisition of knowledge and skills. "UbD reverse instructional design" emphasizes three different but interrelated learning objectives, namely, helping students master important knowledge and skills; helping students construct meanings of knowledge; and helping students effectively use the knowledge and skills learned in new situations [2].

### 2. Formulation and Analysis of Standards

At present, most countries have formulated clear learning goals, which are called content annotation or learning outcomes, which clearly show what students should know and what they can do in different disciplines. In fact, when educators formulate teaching design according to standards, they will encounter three main problems: cognitive load, excessive standards and ambiguous standards. For cognitive load, there are a lot of knowledge contents listed in the standard. Teachers' teaching hours may not be enough, which limits teachers' work and makes teachers unable to fully consider students' needs. Students may also have no spare time to study.

Students' brains carry too much knowledge, and they are mixed with each other so that they can not link effectively, which ultimately leads to a decline in learning interest; for too large a standard, teachers can not formulate specific teaching objectives, can not accurately assess, and too broad a standard is of no help to teaching; for too ambiguous a standard violates the initial formulation of content standards. Integrity means clear, consistent and consistent teaching objectives. The core content of many curriculum standards is complex process and mastery of complex expressive tasks. However, it is difficult for teachers to quickly translate these requirements into familiar teaching objectives. Therefore, it is necessary to analyze the content of the current standard and carefully examine the key nouns, adjectives and verbs that appear repeatedly in the content standard, which will help teachers to have a better understanding of the teaching content.

### **3. Grand Concept**

"Major concepts can effectively explain phenomena and provide a comprehensive survey of science", said Wen Wilkin [3]. Using reverse design to plan a teaching unit, in order to make the teaching plan complete and effective, the design must be clear, pay attention to clear and valuable intellectual factors, which can be called "grand concept" and "core task". Usually, if the teaching unit contains more content than the normal teaching needs, it must be clear about the teaching focus. After choosing what to teach or not to teach, teachers must help learners understand the key content of all learning content. By dividing the key learning contents, students can be helped to connect the various knowledge points.

#### **3.1. The Core of the Grand Concept**

Maybe the concept is not a large, relatively vague word with many contents, nor is it a basic concept. Major concepts are the core of a discipline. They need to be revealed and explored in depth until they are grasped. They have teaching ability and must enable learners to understand what they need to master in advance. It helps to make new and unfamiliar concepts look more familiar. Therefore, concepts are not just another fact or a vague Abstract concept, but a conceptual tool to strengthen thinking, link different pieces of knowledge, and enable students to have the ability of application and transfer. Major concepts can be expressed in various forms, a word, a phrase, a sentence or a question.

#### **3.2. Suggestions for Identifying Grand Concept**

##### **3.2.1. Careful Study of Content Standards**

Many curriculum standard statements imply grand concepts, especially in the descriptive text that precedes the list of content standards. For example, students explain the composition of physical systems and their understanding of concepts and principles, which can describe the internal movement and laws of matter in nature. Students' understanding includes explaining their understanding of the structure and properties of substances, the characteristics of materials and objects, chemical reactions and conservation of substances. In addition, we need to understand the nature, transformation and conservation of energy, the motion and force that affect motion, the essential properties of waves and the interaction between matter and energy.

##### **3.2.2. Ask One or More of the Following Questions About the Subject or Content**

Ask one or more of the following questions about the subject or content criteria Why research? What to study? What makes research popular? What are the "general concepts" implied by any skill or process? What is the significance of studying? What is the application in a larger environment? If we can't understand what, then what shouldn't we do?

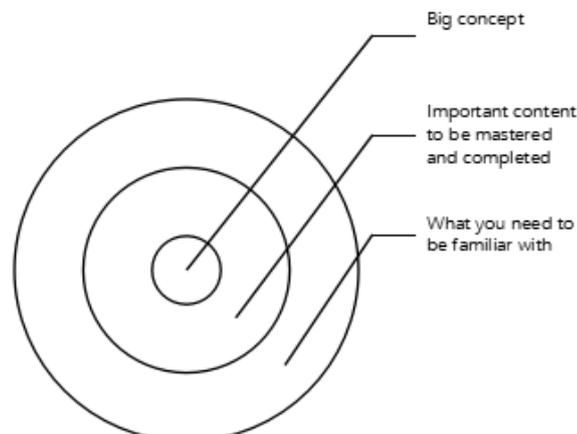
##### **3.2.3. Generate A Grand Concept From A Pair of Related and Prompting Phrases**

This practical method has two advantages: one is that it indicates that various kinds of inquiries must be carried out, such as comparison and contrast; the other is that in order to enable

learners to understand these concepts and find their usefulness, this method suggests learners to constantly reflect.

#### 4. Define the Priority of Teaching Content

Often, because we are faced with more knowledge than we can reasonably teach, and the knowledge presented to students seems to be equally important to them, teachers are obliged to make choices about teaching content and to clarify teaching priorities. A useful framework for determining teaching priorities around general concepts can be described by three nested circles, as shown in Fig. 1. The blank space outside the largest circle represents all possible contents in the field, which may be examined in units or courses. Although it is impossible to teach all the contents, students should be familiar with the knowledge in the largest circle. In the middle circle, we reinforce and highlight our choices by identifying important knowledge, skills and concepts, which are relevant and transferable in the learning of this unit and other relevant subject units. The circle in the middle can also be viewed in another way, which identifies students' pre-requisite knowledge and skills that enable them to successfully complete the key complex manifestation of understanding, that is, the transfer task. The innermost circle requires more careful decision. Teachers can choose to point to unit or curriculum concepts, but also clear the transfer task in the subject center. These three circles proved to be a useful tool when teachers tried to determine the content of a unit or course.



**Fig 1.** Identifies the priority of teaching content

#### 5. Setting Goals Based on Migration Tasks

Priority building depends not only on the general idea, but also on focusing on truly challenging migration tasks in the field. Core tasks refer to the most important performance requirements in any field. These core tasks and related challenge scenarios reflect the transfer of concepts, which requires students to do for a long time. The core task with real challenges embodies our educational goals: the goal of school education is to enable students to live comfortably in the real world, not to respond orally or physically to limited cues. Migration, that is, the reflection of understanding, refers to the ability to skillfully solve the real challenges in the core tasks. What we have learned is only a means to solve the problems. Most importantly, successful migration means that students perform well with little or no guidance from teachers or without clues. To make migration illustrative, consider the following metrics, which serve to self- or mutual-evaluate designs that claim to have applied real challenges.

The task received is strange, even puzzling, and does not provide any clues to deal with or complete the task. To successfully accomplish the task, we need to rely on the understanding of knowledge and situation, and the ability of "remote migration" of individual creativity and

knowledge adaptation. We need to think carefully about what the task requires and what it does not require; what we need and what we do not need; and identify the problems that are emerging in succession, which are not obvious at the beginning, but must be solved. Therefore, the task seems impossible for some people.

This task may seem strange, but it also provides clues or hints when presenting the task, that is to say, some suggestions on the method and content required. The success of the task depends on the application of recent learning content to new and uncertain or different scenarios - "near migration". The main challenge for learners is to figure out what kind of problem it is based on the information given. Once the task is clear, the learner should be able to solve it according to the known process. Although some learners seem to have certain skills and knowledge in the past tests, they may not be able to successfully complete the task.

Tasks are presented on clear reference bases such as pre-planned concepts, themes or tasks, but no specific rules and applicable formulas are mentioned. This task requires a smaller migration. Completing tasks only requires students to identify and recall which rules should be applied and use them according to a familiar problem. Migration only involves dealing with the details of different variables, categories or situations in the cases applied in teaching; it is necessary to know which rules can be applied in a few obvious alternatives.

The tasks presented need only be performed by students according to instructions, and can be accomplished by using recall and logic. There is no need to migrate, just add the technology and content related to the newly completed learning or case. Core tasks and special forms of examinations are different. The core task summarizes many related expressive tasks in different situations and embodies important curriculum standards. Clarifying complex core tasks will make our goals more likely to be intellectually important and coherent. When the goal of conceiving is merely to list facts and techniques, design and teaching will eventually become uninteresting, scattered, and divorced from specific situations. Such goals completely ignore migration. In order to avoid this situation, we must ask the question of knowledge and skills: "What important abilities can this part of knowledge enable us to possess?" Instead of just asking, "What knowledge and abilities may be important?"

## 6. Conclusion

The proposal of UbD reverse teaching design provides a new idea for classroom teaching reform. Its core and important content is the teaching goal, which dominates all classroom teaching activities. In this paper, how to formulate and analyze curriculum standards, how to determine the general concepts are explained and suggested, the priority of teaching content is given the answer, and finally for the transfer of teaching knowledge is given the gauge, which is convenient for teachers to use in teaching evaluation and better formulate teaching objectives. Generally speaking, it is necessary to set clear, consistent and effective teaching objectives, and to ensure that students truly understand them.

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