

Chemical design analysis based on concept establishment

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Abstract. In this paper, the connotation and characteristics of basic chemistry concept are described, value theory structure, content, shape and other related content, and then on the basis of the theoretical system, construction of basic chemistry concept ideas, are combined to promote the concept of "construction" policy, after that the problems in the process of teaching practice and the practice results are analyzed in order to further perfect the construction of basic chemistry concept design research.

Introduction

Chemical basic concepts summed up as "material", "the concept of particle", "the concept of element", "sports", "the concept of classification", "the concept of structure", "experiment", "scientific values", etc. In the teaching process to promote students' concept of "construction", can be in chemistry under the guidance of our basic ideas, causes the student through thinking activity, deep understanding and mastery of chemical knowledge, and through constant reflection and generalization, improve, enhance students understanding of chemistry discipline characteristic and the law of nature [1]. In the teaching activities, can take "chemical basic concepts as the basis, to highlight the chemistry discipline thinking mode, connotation of chemical knowledge, design of thinking value problem, guide students to explore, experience and reflection" teaching strategies, such as to ensure the chemical knowledge teaching always advance towards enhancing students understanding, promote the formation of students' chemical basic concepts.

So-called chemical basic concepts, simply put is gained by the students through chemical understanding of total view of chemistry, basic chemistry concept is not a specific chemical knowledge, it is on the basis of the specific chemical knowledge through constant is outlined [1]. Chemical basic concept embodies the inner link of chemical knowledge, is the main clue, study chemistry knowledge is sweeping understanding of chemical knowledge, for knowledge plays an important role.

The concept establishment of chemical basic ideas

Chemical basic ideas put forward. American curriculum experts Eriksson in her works the concept of curriculum and teaching, puts forward the concept of theory and teaching theory, she thought the course content should be around the core of the interdisciplinary concept (discipline in the centre, have lasting value outside of the classroom and the key concept of value migration, principle or method) to select, learning center of gravity should be transferred to the understanding of the migration of the core concepts and the development of thinking ability [2]. American chemical educator geely, puts forward the main ideas in the "chemical" point of view, he should think chemistry courses around the chemical, the main idea to construction, and a junior chemistry course should contain atoms, molecules, ions, chemical bonding, molecular geometry, dynamics theory, chemical reaction, energy and entropy of the main ideas of modern chemical basis, basic concept and chemical teaching is not achieved overnight, but in certain situations so that the students gradually realize the importance of chemistry in the main ideas and practical value. Beijing normal university professor G.Q Wu think the value of the junior middle school chemistry curriculum is through chemical in the core and the most basic chemical concepts, and the core concept in what he said is not a specific chemical knowledge, but the basic idea of sex [2]. They are elements theory, atomic theory,

chemical reaction, the basic types of chemicals. Tsinghua university professor song believes that "the basic chemistry concept" should be a primary goal of chemistry teaching, professor song has brilliantly pointed out that "students can firmly and accurately, even if it is only qualitative to establish the basic concept of chemistry, chemistry teaching should be the primary target. Recite or memory some specific chemical factual knowledge, of course is valuable, but the value of the more important is that they are the carrier of chemical concepts and some basic ideas." Visible experts have realize the importance of chemical basic concepts and its value.

Chemical basic concepts related theory of deepening stage. Experts and scholars not only the meaning of this paper expounds the basic concept of chemistry, and analyzed the chemical basic concepts and the relationship between the specific chemical knowledge [3]. Especially in shandong normal university professor of chemistry the connotation of the basic concepts, contents, teaching value and the formation process and characteristics to make the theory of system, and based on the basic idea to construct chemistry textbook design aspects of lithology. This to a certain extent, to deepen our understanding of basic chemistry concept.

The construction of basic chemistry ideas stage. Ideas from construction stage construction strategy, construction of teaching design, the concept of constructing the teaching practice of three aspects discussed. Professionals and scholars not only demonstrates the concept of "construction" teaching in chemistry teaching value and its feasibility, and puts forward the basic concept of chemistry training strategies, especially the yong-ping liang of shanxi normal university teacher put forward the concept of chemical elements and energy concept to construct the basic strategy [3]. The concept of "construction" for our teaching provides the concrete implementation method. In terms of ideas to construct the teaching design, the study of chemical basic concepts more and clearer, and that is with the deepening of curriculum reform and the deepening of the essence of education is closely related. Thus, concept of "construction" in chemistry teaching in chemistry teaching has become a basic value orientation and practical pursuit. The research for our firm concept of "construction" has laid a solid foundation of chemistry teaching, but also has its shortcomings, it is existing research in the theoretical level, less talk about specific chemistry teaching. Even if some research is put forward to promote the concept of "construction" teaching design process, but the teaching practice research of curriculum content and the concept of "construction" of teaching evaluation is rarely. In view of the above analysis, this article to Sue includes a compulsory 1 module as the carrier, combined with the case of related teaching concept of "construction" of practice teaching, practice teaching and the concept of "construction" of teaching evaluation, in order to further improve the practice of the construction of basic chemistry concept study.

Basic concepts of general chemistry. Chemical basic concepts in chemistry knowledge as the carrier, on the basis of students understanding knowledge through refining and has high generalization and persistent application value ideas, methods and ideas. Such as: classification concept as an important concept of chemistry learning.

The phases of chemical basic concepts. Stage is not classmate of students to form the basic idea is different, in the junior middle school chemistry learning to form the basic ideas that mainly includes: elements, particles, and energy of chemical reaction, material classification, etc. In high school, students have to study in junior high school based on the basic ideas include: the limits of the structure and properties of material, reaction (chemical equilibrium).

The gradation of chemical basic ideas. Is for the same basic concepts in different period, because the knowledge students have experience is different, its rich connotation of degree is also different. In view of "element", for example, the main content is: material is composed of elements; Each element corresponds to a class of atoms, as a result of atoms is not easy to change, so the elements is not easy to change; In the chemical elements in the same type (unchanged, mass conservation) [3]. The nature of the element with an outer electron configuration present a cyclical change rule.

Chemical basic concepts of progressive [4]. Refers to a higher level of the basic concept is based on lower levels of the basic concepts, not as a basis to the basic idea of the first level, high level of the basic ideas that cannot be formed. For example, students to understand the structure and properties of

the material, you must first understand the concept of elements, particles, and so on. So high school stage of learning chemistry basic ideas is deepening of junior middle school chemistry basic ideas, enhance and expand.

The form and content of chemical basic concepts

The formation of students' chemistry basic ideas need two aspects together. On the one hand, from the point of the material form basic ideas that need, must have the appropriate and effective form chemical basic concept of the core concepts and effective form of these concepts related to chemical knowledge [4]. On the other hand, from the basic concept of forming process, basic concepts must be created for students to form the inquiry activity.

Each chemical basic ideas has its specific meaning. These basic meaning expressed in the form of language form chemistry concept of knowledge form, we call it "basic understanding", originally in the ideological concept of chemistry from literal meaning to explain, is a concrete expression of chemical basic concepts.

Promote the concept construction of chemical design

Teaching design is the starting point of teachers education philosophy put into practice, is also a key to the teaching effect. Teaching design is a systematic method to analyze the teaching problems and determine the teaching objective, establish the strategy to solve the problem of teaching plan, try out solutions, evaluation experiment results and the process of the modified. It to optimize the teaching effect, for the purpose of learning theory, teaching theory and the theory of education communication [5]. Concept of "construction" of chemistry teaching design is the construction of basic chemistry concept teaching design for the purpose of thinking. Concept of "construction" of the teaching design is the design of the traditional teaching only focus on students' mastery of knowledge, lack of chemical subject to the overall understanding and the understanding of the nature and advocating and comply with the concept of new curriculum teaching design.

Clear the basic concepts. When carries on the teaching design, the requirement of curriculum standard, dig deep, affective value, cognitive value migration of the value of knowledge, and to extract and over the entire chapter of teaching content of chemistry basic idea, as the specific direction of constructing the teaching goals and ideas.

To basic understanding form. Basic understanding is a basic concept in the cognitive level of the specific expression, is expected to gradually formed a basic understanding of students in learning activities, is the core of specific facts and deep understanding of the essence of the concept. (4) the determination of basic understanding of the concept of "construction" of teaching operable. The determination of basic understanding requires teachers to accurately grasp the students' cognitive basis and thinking level.

Design study and inquiry activity. Students only in real situations, the student participation consciousness, problem consciousness, exploring consciousness can obtain the full development, power construction of basic chemistry concepts for students.

Reflection evaluation to promote construction concept. Confucius said, "learning without thought is useless; thought without learning is perilous". The importance of learning combined with thinking [5]. Through self-reflection, for training the students' thinking, knowledge generalization ability improved, the application of knowledge ability was improved. After the learning task, should also be timely and appropriate to evaluate student's performance in learning activities, and to student's learning style, learning strategy, and provide guidance thinking point of view, so as to promote the construction of basic chemistry concepts.

The concept of construction design program

The concept of construction design. Curriculum and teaching of new ideas through the teachers' overall conception and system design. Teachers need to plan again through their own teaching design

their own teaching behavior, constantly thinking about their own teaching, and improve their own teaching, and then improve their teaching quality. Professor H.L. Ye, "the idea for this teaching" design procedures and methods of the main contents are as follows [6]:

(1) In determining the course unit, after examining the content of the course unit, to identify a key concepts or principles or methods as core idea, to indicate the direction of thinking process;

(2) The core concepts into some basic understanding, this is expected to gradually formed in the students from learning;

(3) The basic understanding in the form of a "fundamental question" expression, driven by problems teaching and learning, promote students' basic understanding;

(4) Design teaching activities according to the basic problem, learning activities and assessment activities, thus causes the student to participate in the basic problems to discuss and study process, these activities and processes should help students to achieve a basic understanding, finally complete knowledge construction, form the core concept.

The formation of students' basic chemistry concepts through from concept to methods, ideas and knowledge of progressive process. But construction based on the basic concept of chemistry teaching, requests the teacher before the student to carry on the conceptual understanding, basic ideas for the teaching goal, and then to chemical knowledge around the concept of choice material and design the teaching activities and evaluation, experience from the concept of target to knowledge selection, activity design and the process of teaching. Repeatedly throughout the process, the teacher should be thinking about the question: unit through this course, I finally want students to know and understand what and what can be done?

The concept of constructing the teaching design model. Based on the basic idea of teaching design is trying to make teachers in the process of designing teaching consciously recognize the conceptual understanding, and find "tools" to develop the students deep understanding, on this basis, carries on the teaching design, such as shown in fig.1. Under the concept of focus, students' understanding of knowledge not only limited to the isolated knowledge learning, but gradually learn to migrate applications [7].

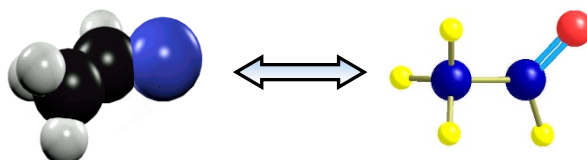


Fig.1 The design sketch of concept establishment

Face contact with a lot of specific knowledge to organize and present teaching materials, how to implement the idea of teaching design, Beijing normal university Y.J. Zhang teaching design model is put forward, in his master degree theses of master of education in the concept of constructing a theoretical and experimental research of chemistry teaching design in the teaching design model is discussed in detail [7].

The teaching design model includes analysis based on concept teaching and to construct the teaching strategies for the design of two process. The first process is a static analysis, through the analysis of the teaching content and student characteristics to determine the reasonable teaching goal, which is to clarify what "teaching" and the class analysis. The second process is a dynamic design, and through the teaching situation, problem, student activities, the design of the reflection strategy, identify what methods for teaching to achieve the teaching purpose, which is in order to define the "how to teach" for the class design.

Summary

Idea of constructing teaching has set up a stage for the show. Chemistry teaching can no longer be confined to those of pure academic or professional basic knowledge and basic skills of one-way, machinery, must by "the knowledge for this" to the concept of "construction", must from the teaching

facts, knowledge into use, the development concept, improve the students' scientific literacy. The construction of basic chemistry concepts are not only conducive to the learning of basic concept and principle of chemical, and can help students to cultivate the basic thought and the development of scientific thinking ability and disciplines, to lay a good foundation for students to set up scientific world outlook and methodology.

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