

# *Thematic Teaching Practice Based on Dual System Education Theory*

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**Keywords:** Dual system, subject teaching, education theory, practice, thematic teaching

**Abstract:** With the change of times, various educational concepts can evolve into various teaching models. The educational theory of “Dual system” needs to open up new horizons, new explorations and new achievements. Through the construction of “Dual system” education theory with Chinese characteristics, explore the “Thematic Teaching” model. The “Dual system” of education and the “Thematic Teaching” model will be extended to the basic education. The core of “Dual system” is “theory pays attention to practice, practice pays attention to experience”. The educational concept of “Dual system” breaks the limitation of teaching time, place, nature, person and result. Enable students to adapt themselves to the society in their study. To enable students to develop themselves in practice. “Thematic Teaching” under the educational concept of “Dual system” is to cultivate students' “Comprehensive learning ability”, master “Principles and methods”, and solve practical problems in reality. Transfer the teaching emphasis from the theory to the practice, then deepen the experience.

## **1. Introduction**

German "dual system" education model is based on the combination of educational concept and practice on the basis of school-enterprise cooperation. "Dual system" is a model of vocational education that combines theory with practice, and its success cannot be achieved without the support from Germany in law and policy [1]. This mode of education has been introduced into China since the 1980s and transplanted into the domestic vocational education field, but the depth and breadth of the transplantation are far less than expected. The key reason for this situation is that educators blindly pursue "original taste", lack of theoretical innovation, and it is difficult to operate in the mode level. Therefore, we should get rid of the old thinking mode, form new vision, new exploration and new achievements, establish the "dual system" education theory and theme teaching mode with Chinese characteristics, and extend it to the field of basic education.

## **2. Development of "Dual System" Education Model and Theory**

As early as 20 years ago, Professor Lei Zhengguang expounded the three levels of the German "dual system" education model, namely, the ideological level, the mechanism level and the model level. In his opinion, the two emphases of "dual system" education mode in the ideological level are "paying attention to practice and skills" and "working for the future", that is, emphasizing the

cultivation of skills and practical ability. On the mechanism level, it is a system with national legislation, school-enterprise cooperation and enterprises as the main body. In the mode level is a standard mode of ability, aimed at cultivating students in the future social employment of adaptation, competition and development ability, in the work of analysis, problem-solving ability, operational ability, application ability, and independence, cooperation, communication, self-study and a series of key abilities [2].

This reflects the rationality of the curriculum structure, the practicability of the curriculum content, the comprehensiveness of the curriculum design, the dual nature of the curriculum implementation, the operability of the curriculum proportion, the advanced nature of the teaching method, the openness of the curriculum management and the effectiveness of the curriculum evaluation. The practice and future idea of "dual system" education mode is the core element of basic education, which is embodied in the aspects of curriculum structure, teaching method, curriculum management and curriculum evaluation.

In fact, in the basic education, "learning while doing", "boundary-free teaching", "interdisciplinary curriculum and teaching" all have the shadow of "dual system" education mode.

In combination with China's national conditions, we should consider the following aspects when drawing lessons from Germany's "dual system" education model: First, we can learn and expand to basic education. Second, we should not be bound by the education model, but have the courage to make breakthroughs. Third, we should innovate in concept and form the educational thought of "dual system" with Chinese characteristics in the new period.

In the late 1990s, the research on students' practical ability began to be carried out on a large scale in the field of basic education in China. In the course of the research, the PEID curriculum (practice - experience - innovation - development) was explored step by step. The core of "dual system" education theory is "theory pays attention to practice, practice pays attention to experience". It breaks the limitations of time, place, character, task and result in teaching.

### **3. Thematic Teaching Practice Embodies the Core Concept of "Dual System"**

#### **3.1. Themed Teaching and "Dual System" Education Mode**

Thematic teaching and the "dual system" education mode of "theory pays attention to practice, practice pays attention to experience" is to pay attention to the combination of practice and future, and should be considered from the perspective of needs. "Dual system" emphasizes task-driven, that is, closely around the task, under the strong motivation of the problem, through the active application of learning resources, independent exploration and interactive collaborative learning, and in the completion of the set task, guide students to obtain theoretical and practical learning results. Thematic teaching takes practical problems as the course method, establishes the theme framework, takes students as the center and tracks the thinking process of students, and trains students' comprehensive learning ability through the learning stages of conception research, creative design, craft production and demonstration and communication. It can be seen that the difference between "dual system" teaching and theme teaching is reflected in two aspects: first, the "common task of reality" of "dual system" comes from the reality of enterprises, while the practical problems of theme teaching come from the social reality; Second, the "theoretical and practical learning results" of the "dual system" reflect the needs of enterprises, while the comprehensive learning ability of the theme teaching is reflected in the mastery of principles and methods.

#### **3.2. Thematic Teaching Based on the "Dual System" Education Theory**

The purpose of thematic teaching is to cultivate students' comprehensive learning ability, which is

reflected in the mastery of principles and methods, rather than mastering some isolated concepts and theorems, or simply solving problems, but to solve practical problems. This is to shift the focus of teaching from theory to practice and then to deepen the experience.

“Dual system” of education to expand the learning time, and learning becomes lifelong learning; Teaching involves not only teachers and students, but also social personnel. The task of teaching extends to the practical needs of the whole society. Such expansion often relies on digital, networked and intelligent means.

### **3.3. Thematic Teaching of "Dual System" Based on Students' development Needs**

In addition to meeting the needs of social development, education should also meet the needs of student development. Basic education should abandon the fixed thinking of "theory pays attention to practice, practice pays attention to experience". It is necessary to combine the social development needs with the students' development needs organically. Such as "learning and doing", "borderless teaching" and "interdisciplinary curriculum and teaching", theory and practice must be combined.

## **4. Course Construction of "Thematic Teaching Practice"**

Although China and Germany have different national conditions and certain differences in the specific content of teaching standards, some framework contents can still be used for reference. For example, to equip students with skills that is relevant to the humanities and society. We have the ability to respond flexibly to social changes and adapt to common international development. Ready for professional and continuing education. To improve the ability to adapt to personal life and manage social life. At the same time, Analysis of the learning field of the working technology electronic technical workers.[The resolution of the German Culture Ministers' Conference on May 16, 2003 "Learning field" (for vocational training)] requires: to achieve this goal, schools must emphasize action-oriented; Ensuring that unique and flexible programmes are provided to equip students with knowledge and skills that are relevant to the needs of the community; Provide learning opportunities for people with disabilities and persons subject to discrimination wherever possible; Guide students to avoid and reduce environmental pollution and accidents. Focus on the core issues covered by the course, such as: proper handling of human relationships; We will maintain basic living needs and protect human rights.

For the practice of "subject teaching", the choice of projects is not an easy thing. To make students' learning truly toward the goal of core literacy development, cannot leave the project. The selection of projects requires designers to have a big model and vision, which requires not only knowledge, ability, but also technology. Learning based on "theme-based teaching" requires real and challenging projects to activate and drive students' learning thinking and produce demonstrable learning outcomes.

### **4.1. The Construction of "Thematic Teaching Practice" Courses should Truly Reflect the Concept of Core literacy Cultivation**

The report of "5C Model of Core Literacy in 21st Century (Chinese version)" proposes that "5C Model of Core Literacy in 21st Century" includes Culture Competency, Critical Thinking, Creativity, Communication and Collaboration. The first letter of these five qualities is C, so this model is called the 5C Model of Core Literacy, and these qualities are referred to as 5C Literacy for short [3]. Culture Competency, Communication and Collaboration are basically the same as our survey in 2009. At the same time, we believe that Critical Thinking, Creativity and practical ability (ability is the possibility of behavior from the perspective of consciousness) can be generally considered as "innovative Thinking and practical consciousness", which is "dual" and belongs to the category of spirit.

Relatively speaking, "Thematic Teaching Practice", as a behavior practice-oriented teaching method, should pay special attention to the cultivation of core qualities in behavioral categories such as cultural understanding and inheritance literacy, communication literacy, and cooperation literacy. The "innovative thinking and practical awareness" should be integrated into each link of cultural understanding and inheritance accomplishment, communication accomplishment and cooperation accomplishment.

#### **4.2. Key Points of the Construction of "Thematic Teaching Practice" Courses**

1) The close combination of theory and practice is the basic requirement of "Thematic Teaching Practice";

2) Basic theoretical knowledge of teaching must be combined and student life practice;

3) On teaching continuously extend, as far as possible acquisition of interdisciplinary, cross program of basic knowledge and skills;

4) Practice oriented teaching method.

The premise of "Thematic Teaching Practice" teaching is curriculum construction, which is a behavior-oriented and practice-oriented course.

#### **4.3. Teaching Methods of "Thematic Teaching Practice"**

1) Teaching benchmark is based on real events and real problem of case;

2) Starting point is to cultivate students the ability to learn as much as possible, let the student independently to complete the task or independent thinking;

3) Must by the learner as an independent action plan, implementation, testing, where possible, modify and final evaluation;

4) Action to have more comprehensive understanding of reality;

5) Must act with learners combination of experience and reflection on the social practice;

6) Action should also include social process.

"Thematic Teaching Practice" is achieved through different teaching methods. The above goals all emphasize the development of students' ability to act, which can be understood here as the ability to adapt to various social life, continuing education and career development plans, as well as the ability to correctly deal with the relationship between the individual and the society. These competencies point to the learning effects of individuals learning in work and social Settings and dealing independently with problems.

#### **4.4. Embodiment of Ability in "Thematic Teaching Practice"**

1) In the framework of team learning behavior, learning and external and internal partners others build interpersonal communication;

2) With the latest information and communication system to obtain information, processing tasks and projects, archive and demonstrate the result of the work and study;

3) Attend to informatics, mathematics, engineering, science and sociological perspectives in planning and implementing work;

4) Through the use of appropriate materials, conscientious treatment and pay attention to environmental protection regulations.

Points of attention in "Thematic Teaching Practice":

1) Enhance humanities accomplishment, promote the formation of world outlook, the outlook on life and values;

2) In specific tasks independently on the basis of the culture communication and cooperation

ability, strengthen the team cooperation, have the ability to flexible social changes and the international common development ability to adapt;

3) With real examples as the carrier, to learn about the key knowledge of interdisciplinary, Interdisciplinary course, promote located in your personal life and the ability to properly deal with the social life and preparation, for further education, career planning and training, to prepare for the lifelong development;

4) The synthetical use of acquired knowledge, to achieve effective practice experience, the ability of creative thinking and design, implement the innovation and development.

Through the study of "Thematic Teaching Practice", a scientific pedagogical theory and methodology framework is formed, and at the same time, it closely revolves around the core accomplishment [4].

#### **4.5. The Key to the Implementation of "Thematic Teaching Practice" is the Transformation of Talent Training Mode**

Theoretically speaking, the course of "Thematic Teaching Practice" is designed according to the behavioral framework, which is difficult to be fully implemented in basic education. This is not only affected by the established subject curriculum system, but also the problem of teachers themselves, which is difficult to change in a short time. Therefore, "Thematic Teaching Practice" can only actively seek for appropriate "themes" within the framework of the subject system, and construct a relatively complete "Thematic Teaching Practice" course without completely breaking the existing subject system structure.

The customary "academic evaluation" is to point to academic performance, and the other is to focus on thinking ability. This positioning itself is completely correct, but once involved in academic performance, there is bound to be a comparison of academic performance, then how to define the upper limit and bottom line of academic performance? How to evaluate thinking ability after all? At present, in the operation of "academic evaluation", it is still difficult to carry out "standard attainment + high-level thinking + achievement balance". In addition, the key of "academic evaluation" lies in the relationship between evaluation and curriculum standards, in other words, "curriculum is the core". The "academic evaluation" with curriculum as its core cannot get rid of the multi-level evaluation indexes, which are the fundamental of exam-oriented education.

In the teaching of "Thematic Teaching Practice", we should have the thinking of "talent training standard", and combine it with academic evaluation. The standard of talent training is the standard of talent training, a central link in the school planning, construction and development, the concretization of the goal of talent training, and the basic basis for the design and arrangement of teaching content and curriculum system [5]. Reasonable personnel training standard is the key to realize education reform and promote the development of knowledge economy.

The specification of talent training is the refinement of the educational goal and solves the problem of the direction of talent training. Personnel training specification is according to the national policy and talent market orientation to develop in accordance with the professional education training objectives of comprehensive quality requirements, specifically for the professional personnel training direction and to achieve the goal of a general description and after a fixed number of year of study, the professional talents in the aspect of knowledge, ability to achieve the basic requirements [6]. The standard of talent training should highlight the basic characteristics of local education, highlight the characteristics of The Times, deal well with the relationship between the coordinated development of knowledge, skills, experience and value, and deal well with the relationship between the unity requirement and diversity requirement of talent training.

"Specifications for talent cultivation" emphasize the identity of social orientation, that is, "taking

social needs as the core". There is only one yardstick, the "talent development specification", for the outcome of a particular level of education, which is the need (including knowledge, skills, experience, and values). As for ability, in the formulation of "talent training specifications" of basic education, it can only provide the direction and possibility of development, rather than a ruler or a quantitative evaluation.

#### **4.6. The Concrete Process of the Course Construction of "Thematic Teaching Practice"**

"Thematic Teaching Practice" needs to carry out teaching activities corresponding to a typical real life case, emphasizing the behavior practice orientation. To ensure the unique and flexible design of "Thematic Teaching Practice" activities, so that students can master different life skills and abilities to adapt to the needs of society. The course construction of "Thematic Teaching Practice" needs to take all kinds of special situations into consideration, impart knowledge and skills that are of great significance to students' adaptation to social life, development of higher education and vocational education, and lifelong development of students, and equip them with correct emotions, attitudes and values. Theoretical teaching and practical teaching complement each other. In learning professional courses, students transition from low-level imitative learning to high-level innovative learning, which is a circular upward development process.

In this way, learning activities from low level of imitative learning to high level of innovative learning, it is a circular upward development process, is the only way of innovation. It should be noted that the significance of "dual system" education can be reflected only when this kind of cycle increases from learning to innovation [7].

In the course construction of "Thematic Teaching Practice", the orderly social investigation should be carried out first, and the basic conclusion of the investigation has been formed. Through the research, the basic "theme" teaching practice curriculum has been formed.

In the course construction of "Thematic Teaching Practice", the first step is to conduct orderly social investigation and form the basic conclusion of the investigation. Develop a basic "Thematic Teaching Practice" course through research. Subject teaching practice course must be reflected in theoretical teaching (including: professional knowledge and cultural knowledge, etc), the practice teaching skills (including education and career education, etc.), humanities education (including: moral accomplishment, team spirit and innovative spirit, etc.) from three aspects, the three cannot be ignored, the current should be more emphasis on the "subject" the combination of teaching practice and students' development, focus on double core literacy of students.

Secondly, the requirements of "Thematic Teaching Practice" are inextricably related to theoretical teaching and practical teaching in school education, so it is the basic premise to improve the "theme" teaching practice to adjust the content of theoretical teaching and strengthen practical teaching. At the same time, the identification of social culture is inseparable from the humanistic education in schools, and the education in this respect must be connected with the cultural spirit of the society, and the relevant elements of the social cultural spirit should be introduced into the teaching, so as to shorten the distance between book knowledge and the real environment.

### **5. Basic Ideas of Teaching Practice on the Theme of "Dual System"**

#### **5.1. Generation and Selection of Teaching Topics**

The "dual system" theme teaching course is to solve the common practical problems in reality, so it is necessary to sort out the existing subject textbooks, and transform the subject knowledge chapter ordering course into the task-leading course. For a long time, we used to think of PEID courses as reordering courses, but it turns out that this is unrealistic. Subject curriculum ranking is based on the

type and depth of knowledge, while task-led curriculum is based on the depth and breadth of unique knowledge.

For example, the course of "steam engine" is divided into three states of matter (water) and mechanical movement according to the type of knowledge. According to the depth of knowledge, primary schools and junior high schools focus on the three states of matter (water), while senior high schools and professional schools focus on mechanical movement. "Dual system" subject teaching course is different, the material three states and mechanical movement on a teaching task, elementary school and junior high school with material (water) to the qualitative analysis of three states and simple mechanical movement (model) is given priority to, high schools and in higher professional study is given priority to with more specific actual mechanical device (e.g., internal combustion engines and steam turbine).

Therefore, the generation and selection of "theme" in basic education must give consideration to the realistic intuitiveness of the problem and the simplicity of teaching. Still take "steam engine" as an example. Can we take Watt's invention of the first controller to adjust the speed as the teaching "theme"? (Using the figure of the 360 entry "centrifugal governor", the principle will not be repeated. See Figure 1) This "topic" involves the following knowledge points:(1) steam engine; (2) leverage; (3) circular motion; (4) open loop regulation system; In the history of automation technology, the earliest closed-loop regulation system in the world was in the eighth year of Yuan Feng (1085). Su Songhui, Han Gonglian and some young students of the Taishi Bureau at that time absorbed the advantages of each other, innovated, and designed and manufactured the water transport instrument and image platform together. For junior high school learning points mainly in the first three.

## 5.2. "Dual System" Theme Teaching is "Project-Oriented" Teaching

Theme is the backbone of teaching activities. It is necessary to distinguish task-driven teaching and project-oriented teaching. Task-driven teaching, according to the teaching requirements of the practical significance, in line with the students' cognitive level of the task, to complete a specific task as a clue, the teaching content subtly hidden in each task. The relevant knowledge to complete the task will be linked together to present a clear learning clue for learners. At the same time, combining with cases, the basic principles and methods of the course will be emphasized, so that learners can establish a visual cognition of the knowledge and strengthen their cognitive processing [8]. Project-oriented teaching is to divide the course into several relatively independent teaching items according to the practical requirements, and implement the integration of theory and practice [9]. The theme teaching of "dual system" belongs to project-oriented teaching, which pays more attention to the expansion of time, place, characters, tasks and results.

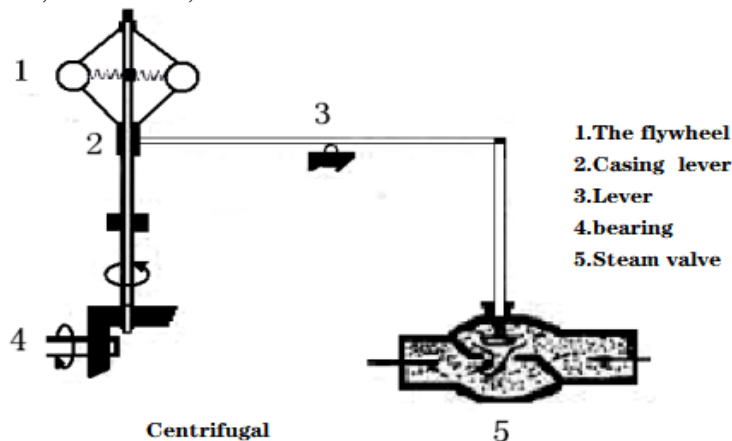


Figure 1: Centrifugal governor.

### 5.3. Contents of the "Dual System" Theme Teaching Plan

The Curriculum Plan of General Senior High School (2017 edition) points out that: Emphasis should be placed on structuring the curriculum content by taking the big concept of the subject as the core. With the theme as the guidance, make the course content situational, promote the implementation of the core quality of the subject [10]. A complete thematic teaching unit, including course description (nature, requirements and objectives of the course), main content (knowledge, ability, skills), situational design (task, process and organization), project teaching design and assessment criteria and other elements. Specific theme activity design can adopt "utilize... Equipment, using..... Method, design... Activity, achieve... The form of the goal.

The reform of subject education in the new era takes cultivating students' core quality as the starting point. In recent years, teaching is shifting from focusing on imparting knowledge of a single subject to exploring the value of discipline education, and training new people through discipline and curriculum. When teaching returns to the origin of educating people, the teaching method at this time has become the educating way. By strengthening the way of practical experience in the formation process of experiential theory, students' practice, based on disciplinary practice, is gradually expanding to interdisciplinary practice, comprehensive practice and labor practice [11]. Compared with traditional teaching methods, the difference between theme-based thematic teaching practice and traditional teaching methods is mainly reflected in the change of three centers, that is, the change from teacher-centered to student-centered, the change from textbook-centered to project-centered, and the change from classroom-centered to practical experience-centered [12]. "Thematic Teaching Practice" is in line with the spirit of the new curriculum reform. Starting from the basic thought of "dual system" and "theory pays attention to practice, practice pays attention to experience", it is of great theoretical significance and application value to study the connotation and design of "Thematic Teaching Practice". Through course construction, a certain theme is turned into the content of practical teaching, and students are allowed to improve their ability to solve practical problems with the help of various exploration means and activities as well as various resources related to the theme, and finally settle their foothold on the needs of society and student development.

## 6. Conclusions

"Theme teaching" is based on the "Dual system" of education, not for "Theme" and the implementation of "Theme" teaching, but to train students' comprehensive ability. "Theme teaching" under the educational concept of "Dual system" is an effective way to achieve teaching objectives. In the implementation process must follow the "theory pays attention to practice, practice pays attention to experience" of the "Dual system" of education.

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