

# Exploration on the Curriculum Reform of Drilling Fluid Preparation and Maintenance in National Resource Sharing Course

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**Abstract:** As a core course of petroleum engineering technology, the course of "Drilling Fluid Preparation and Maintenance" carries the training task of post-graduate employment in masters' professional ability, method ability and social ability. In order to cultivate high-end skilled personnel who meet the needs of the job, the "Drilling Fluid Preparation and Maintenance" course integrates a variety of design concepts to guide the reform, change the traditional teaching methods, effectively student-centered, employment-oriented, motivate students to learn motivation, Improve teaching quality.

**Keywords:** Petroleum engineering technology major; Core curriculum; Masonry; Post; Design concept; Teaching quality

## 1. INTRODUCTION

The "Drilling Fluid Preparation and Maintenance" course is a core course of the petroleum engineering technology specialty of Chengde Petroleum College. In order to achieve the goal of the course, this course integrates many kinds of concepts throughout the curriculum design and construction: education of lifelong learning, students' concept of multiple intelligence, constructive view of knowledge, "design-oriented" view of vocational education, quality of competence-based. The concept of process-oriented curriculum, the concept of action-oriented teaching, and the concept of curriculum development based on the cooperation between school and enterprises.[1] The concepts to be followed are based on the principle of "employment orientation" and the needs of mason jobs as well as the characteristics of vocational students, possess career skills required for a job market, career development skills and lifelong learning skills. The "ability to target the actual work content as a carrier"; "integration of knowledge, theory and practice of" teaching philosophy into the overall teaching of curriculum design.

## 2. THE CONCEPT OF CURRICULUM DESIGN

### (1) Lifelong learning concept of education

The object of education into their own education of the main body, so that students master the ability of

lifelong learning; teachers from the instructor into a guide, the teacher is drilling fluid preparation and maintenance technology learning process organizer and Coordinator[1]. Change the traditional "teaching" as the center of teaching methods, and "learning" as the center, to be exact that is, students practice training as the center. In teaching, let students practice their own "hands-on" practice, acquire professional skills, acquire professional knowledge, so as to build their own experience and knowledge system, access to lifelong learning ability.

(2)The concept of multiple intelligent students Vocational students with intelligent thinking of the image structure and type of teaching to do to take an integrated training mode to enable students to learn practical skills in hands-on operation, in the process of practical skills to learn must be able to use theoretical knowledge. Explore students 'potentials and develop their individuality in the process of students' autonomous learning; let them experience the experiences of opening up wisdom and enhancing self-confidence, and make our education as successful education.

### (3)Constructive view of knowledge

Constructivism, knowledge is not "mirror" reflection of the object of cognition, knowledge is generative, rather than static and absolute [1]. Students 'knowledge is to actively develop themselves through the interaction with others, independent thinking and hands-on practice in learning situations. Instillation teaching limits the development of students' creative thinking. Therefore, part-time teachers of "Drilling Fluid Preparation and Maintenance" should create a suitable learning environment and adopt the project-oriented and situational teaching methods so that students can take the initiative to construct their own experience and knowledge and complete the career from beginner to "skill expert" Ability to develop. Students with independent learning ability and creative thinking, they can self-construction of new vocational skills, to adapt to the changing career.

### (4)Design-oriented vocational education concept

The object of vocational education is the potential participants of work and technology design and

creation. The learning content is not limited to the technical function, and is generally a learning task with no fixed answer open in vocational practice. Drilling fluid in the cycle, the performance changes at any time, mud masters must always pay attention to the density of the drilling fluid, viscosity and other properties of the degree of change, at any time to monitor its requirements and drilling process between the "drilling fluid preparation. And maintenance "Curriculum design should follow the" design-oriented "concept of vocational education, design an open task, in the real team, the real environment and the school-enterprise training center to build a semi-simulation environment, the students creative ability. So that students not only have the ability to adapt to technology, but also have the ability to "participate in the design and creation of the future technology and working world in a socially, economically and environmentally responsible manner." So that students are no longer just skilled workers in the future as "tools," but potential participants in the design and creation of technology in all areas of society[2].

#### (5)Quality-oriented Quality Concept

Students trained by higher vocational colleges should have strong practical ability and adaptability. They should adhere to the principle of ability-based principle in terms of the educational goals, contents of education, education process and education evaluation of higher vocational education. The ability to establish the concept of standard [2], "drilling fluid preparation and maintenance" of the curriculum goal is to develop occupational skills, systematic courses through the work process of learning, students based on personal practical experience, from beginners to competent drilling fluid technology positions. The "Drilling Fluid Preparation and Maintenance" course should be designed with employment as the orientation to train students not only to become "professionals" and "professionals" of drilling fluids required by society, but also to become "social people" who can survive and develop. Not only will students be given practical vocational skills but also internalized vocational skills so that students will be able to continuously acquire new vocational skills and occupational qualifications in their changing careers so as to continuously improve themselves and create broader development space.

The key step of curriculum development is to select the course knowledge content and the sequence of implementation. The "Drilling Fluid Preparation and Maintenance" course is a specialized course for developing core vocational skills and should return to social work. Curriculum design using the integration of theory and practice process-oriented learning process (project) curriculum model, the choice of teaching content and the content of the curriculum follow the occupational principle, starting from the drilling fluid job position to choose the course

content and teaching sequence . Through scientific and rigorous professional research, analysis of mud and drilling fluid work process to determine the typical tasks, based on the actual working process of drilling fluid design and learning situation, sequence teaching process. The construction of an action system course centered on process logic emphasizes the acquisition of self-constructed tacit knowledge - process knowledge, which mainly addresses the issues of "how to do" (experience) and "how to do better" (tactics). "Drilling fluid preparation and maintenance" course as a professional core curriculum, the project teaching content should be process knowledge (practical knowledge), supplemented by a moderate enough declarative knowledge; through the integration of theory and practice of learning process, in the based on the accumulation of personal experience of the system of discipline expertise, and ultimately reached the technical level of drilling fluid experts.

#### (6)Action-oriented teaching concept

The basic connotation of action-oriented teaching is to guide the teaching process through action products. Students can achieve the unity of mental and manual work through active and comprehensive learning. There are two basic characteristics of action: one is that students can choose their own way from many possible ways of action; the other is that students can make predictions about the possible outcome of actions before they act, consciously and purposefully through planning Action result [3]. The goal of "Drilling Fluid Preparation and Maintenance" is to develop students' core vocational skills and is a hands-on course. The teaching of action-oriented teaching follows the complete sequence of "action," "information, planning, decision-making, implementation, inspection and evaluation". In teaching, students should master vocational skills and acquire professional knowledge in their hands-on practice knowledge, to build their own experience and knowledge system. The learning of this course emphasizes "learning for project work" and "learning through project work", and the work process and learning process are unified.

As the main body of learning, students should take the action ability in vocational situation as the goal, take the project working process in the learning situation based on the professional situation as the way, and the interactive action between teachers and students and students as the way to stress learning. The process of self-construction of middle school students is the process of learning, which is based on the assessment of the action ability formed by the integration of professional ability, method ability and social ability. Students are also capable of independently planning, implementing and evaluating vocational practical problems. Teachers are the organizers and coordinators of the learning process. A good teacher should be the designer of the learning

situation and the director of the learning stage.

#### (7)Curriculum Development Concept for School-Enterprise Cooperation

In order to create a true drilling fluid environment for students, the school cooperates with the drilling company's practical experts to develop the curriculum and make use of the two educational resources of schools and enterprises to create learning situations and curriculum implementation conditions. School-based enterprises work closely together to educate people together. Work together to develop student jobs, typical tasks and teaching methods; cooperation in the construction of teaching materials and teaching resources, co-develop student internship management system, work out the development and evaluation of student learning outcomes approach; in the process of enterprise environment curriculum, co-management and monitoring of teaching and learning; school and enterprise part-time each other to build co-managed teaching, job training and technical cooperation in the development of part-time team, schools and businesses in close cooperation and mutual benefits and seek develop together. Drilling Fluid Preparation and Maintenance consists of five learning scenarios. Two of the learning scenarios (masonry job awareness and use of solid-control equipment) were completed in a real-life team environment and three learning scenarios (drilling liquid performance measurement, drilling fluid preparation and drilling fluid invasion after the treatment) is completed in the school semi-simulation training environment.

#### (8)Melt the multiple assessment of the concept of ability

In order to achieve the goal of the course, but also objectively, comprehensively and fairly assess the students' professional ability, ability and social skills training level and extent of the establishment of a scientific assessment system. Change the one-person evaluation system of teachers in the past, but around the student-centered comprehensive evaluation of teaching, including self-evaluation, the results presented, student assessment, teacher-student mutual assessment and other forms. Comprehensive and scientific assessment of skills mastery, knowledge use, behavior, teamwork, communication skills, sense of responsibility, independent planning needs the ability to complete the quality of work tasks, self-learning ability. The level of vocational qualification certificate as one of the assessment items, combined with the process of examination results a comprehensive and comprehensive assessment of the true level of students.

#### (9) Cultivation of high-quality technical skills Talents Objectives

Students under the guidance of the teacher, the use of "five-step method" in accordance with the drilling fluid working process to complete drilling fluid preparation, performance measurement, solid-phase

control equipment, use and maintenance work process plan formulation , modify, confirm, and implement so that students can master drilling fluid selection, preparation, maintenance, performance measurement, performance adjustment and handling of complicated situations in the drilling process and other operations, training students to learn independently, have a good learning transfer ability to train students to collect information, organize information, analysis and problem solving skills; students willing to sacrifice, dedication professional ethics, with a strong sense of social responsibility and hard-working, training students have a good teamwork and communication skills . Upon completion of the course, drilling mud workers mid-career vocational qualification certificates obtained.

Process	Procedure	Purpose
Professional analysis	Job Analysis	Analyze the current situation of the profession, determine the job positions and tasks
	Work task analysis	
Work process analysis	Typical tasks	Induction of the typical work of drilling fluid work area to produce action areas
	Professional ability requirements	
Instructional design	Course standard	Pedagogical areas of action form learning areas and learning situational design
	Learning situation	
Teaching implementation	Project teaching	Action-oriented course implementation
Improve	Evaluation feedback improved	Curriculum evaluation and improvement

Table 1. Development of "Drilling Fluid Preparation and Maintenance" Curriculumme

### 3. CONCLUSIONS

The selection and reorganization of teaching contents in the course of preparation and maintenance of drilling fluid deeply embodies the viewpoints of highly integrated multi-curriculum reform in terms of comprehensive application of teaching methods and multiple combinations of teaching methods so that the course mobilizes students' autonomy Of the study enthusiasm, and comprehensively train students' occupational, institutional and social skills as well as their professional qualities in post work. The quality of graduates is guaranteed and highly recognized by employers.

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