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Training Mechanism Reform of Innovative Talents under the Concept "Student Centered Learning" (SCL)*

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***Abstract*—The educational concept of "SCL" emphasizes stimulating students' internal driving force in learning and pays attention to the whole process of teaching. It consists of students' active learning consciousness and learning ability, the development of learning habits and self-management pattern, learning style and education evaluation standard. The reform paths of training mechanism for innovative talents are explored through implementing blended teaching and teaching style of investigative study and reforming teaching assessment method in teaching practice.**

Keywords—student centered learning; innovation education; talent training

I. INTRODUCTION

The educational concept of "SCL" proposed by American scholar in the middle of the 20th century causes the reform of basic concepts, teaching methods and teaching management in higher education. "SCL" emphasizes the dominant position of students and stimulates their enthusiasm in learning. As the center of learning environment and activities, students are explorer and builder of knowledge. Learning in university means universities create environment for students to independently discover and build knowledge. Students are regarded as "learners" who can find and solve problems in this process. Teachers are regarded as "organizer" and "guider" in designing learning.

II. CHARACTERISTICS OF EDUCATIONAL CONCEPT OF "SCL"

A. Student-centered and Stimulate Their Internal Driving Force

"SCL" pays attention to the whole educational process and results. The core of education quality is the growth and development of students in cognition, skills and attitudes. Students as "learners" are regarded as the center of education activities. "Teaching" guides "students" to create knowledge instead of absorbing knowledge. The process of "teaching" guides students to study and think independently. "Learners" are responsible for learning in order to gain ability in active and independent learning. Except for learning disciplinary knowledge, it is more important for students to gain ability in researching and solving problems. [1] In this process, students should actively construct knowledge. Teachers leave a large amount of time for students to learn and think after class through salutatory teaching contents and integration design. Students can participate in debate on problems and difficulties and experience it in person. It ceases to be the traditional teaching pattern that teachers think on behalf of students and pass knowledge to them.

B. Adjust "Educational Concept" and "Quality Culture" and Pay Attention to the Whole Educational Process

"SCL" pays attention to the "personalized, process and active" learning of learners in the educational process and development of students. From the perspective of students' "learning", the purpose of education is "learning" instead of "teaching". The important standard to measure higher education quality is the training quality of talents, namely students' growth and development. The educational pattern changes under the leadership of "SCL". "Educational concept" and "quality culture" change accordingly, letting the demands of "learners" run through the teaching strategies and educational process. The school education should center on students' integrated development and provide opportunities for students to achieve the ideal, become useful and start their career.

III. CONSTRUCTION WAY OF EDUCATIONAL CONCEPT OF "SCL"

A. Active Learning Consciousness and Learning Ability of Students

"SCL" emphasizes students are subject of education but teachers are still responsible for students through "guiding" them in learning. Traditional teaching design places emphasis on subject knowledge instead of analyzing learning needs of students. In the teaching design of "SCL", the learning needs of students must be analyzed and taken into full consideration. Teachers guide students in learning and growth according to

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teaching experience. The teaching process of "SCL" focuses on "learning" of students, and "teaching" of teachers becomes a part of teaching activities. The transformation from "teacher centered learning" to "SCL" depends on the interactive learning method of teachers and students. Teachers should attach importance to students "learning". As the subject of learning, students acquire knowledge through independent learning and thinking instead of teachers' teaching or mechanical learning. When learning knowledge, students interact and dialogue with nature, society, others and themselves as well as create new knowledge.

B. Development of Learning Habits and Self-Management Mechanism

In the traditional teaching pattern, restricted by teaching management system such as credits, students fail to plan the selection of courses systematically after admission. Some students don't have clear learning objectives, fail to make long-term plan for learning and neither rapidly find effective learning methods nor develop good learning habits. In colleges, students must grasp concepts and definitions of knowledge. More importantly, they should learn methods and develop ability to solve problems. Students fail to develop good learning habits and have poor self-study ability because of the absence of internal learning motivation. It influences the ability of students in independent thinking and reflection and goes against the training of innovative talents in colleges. "SCL" emphasizes the adjustment of relationship between students and teachers, students and administrators. Schools are required to guide students to participate in daily management, train students' self-management ability and form the self-management mechanism, in order to strengthen students' comprehensive abilities and social competitiveness.

C. Learning Style and Educational Evaluation Standards

The traditional teaching methods are teacher-centered, and students receive knowledge passively. It fails to give play to students' enthusiasm and initiative. Although students realize the importance of learning, they lack the external objective environment to participate in the teaching process. Therefore, students' learning motivation and interests cannot be effectively motivated. It restricts the training of students' independent thinking ability. Systematic planning and design of teaching methods lack to train students' ability in learning subject knowledge, personal ability and interpersonal communication ability as well as the construction ability in products, processes and systems.

"SCL" in education centers on meeting students' requirements in growth and realizing students' integrated development. Educational assessment standards refer to the comprehensive evaluation on knowledge skills grasped by students. Attentions are paid to students' level and development needs in higher education management and evaluation of educational quality. Educational quality is measured according to students' learning development, including: first, whether students get growth and development in learning; second, how schools promote students' development and have positive effects in system, resources and environment.

The educational assessment standards and ways base on student assessment. The evaluation contents and indexes pay more attention to the improvement of students' learning outcomes and effects. Evaluation indexes and contents should be diversified to effectively find and solve problems and promote the reform in teaching. Evaluation methods combine with teaching reform, including self-evaluation of students and teaching evaluation. We can reform according to students' evaluative feedback to improve the efficiency of students' evaluation.

IV. "SCL" PATHS OF COLLEGES TO REFORM TRAINING MECHANISM FOR INNOVATIVE TALENTS

A. Center on Learning Needs of Students and Implement Blended Teaching Pattern

Blended teaching pattern combines online and offline courses and use flexible teaching methods, teaching organization forms and teaching environment to expand teaching scope and improve teaching flexibility and teaching efficiency and effectiveness. On the basis of retaining the traditional classroom teaching forms, the blended teaching pattern creatively combines traditional teaching, internet and teaching information technology and realizes the teaching process that teachers guide and students participate actively and "bidirectional" teaching form. According to the differences in participation forms, the blended teaching pattern mainly includes:

1) Complementary model: It reserves the traditional curriculum modules and adds teaching activities with participation of the internet to make the learning contents more attractive. The contents and credit hours of the traditional classroom teaching remain unchanged.

2) Substitute model: The participation of more teaching forms increases in this model, including: first, the classroom teaching methods remains unchanged, and the teaching methods after class just serve as the supplement of students' learning needs; second, the teaching of some knowledge realizes through other teaching methods after class, and the teaching activities and contents in class adjust. In this model, because of the different learning forms such as individuals or groups, the classroom teaching time of teachers can be adjusted properly.

3) Self-selection model: It is a "personalized" teaching model that allows students to determine learning time, contents, forms and progress by themselves. It thinks the best time of learning is not when teachers want to teach but when students want to learn. It has higher requirements for teaching. The courses in this model aren't taught by teachers in class. Instead, online learning centers or mutual help group of learning provide more learning resources and personalized assistance that is available at any time. Schools provide space, equipment and teachers. Teachers should prepare online courses as necessary resources for teachers to complete learning tasks. Teaching effects can be achieved through "one-to-one" online interaction and assistance. [3]

The blended teaching pattern centers on blended teaching courses. Teaching links form complicated and dynamic support systems. According to students' demands, it designs theoretical, skilled, high level and practical courses. The evaluation of blended courses and teaching patterns bases on the presupposed ability objects of students in the design of teaching pattern and carries out from students' learning effects and course implementation objects. It includes process evaluation and result evaluation.

B. Enlighten Learners' Goal Consciousness and Implement the Teaching Method of Investigative Study

As a teaching method, investigative study means teachers create scenes and ways similar to scientific research, organize teaching process to arouse students' interests and promote the understanding of knowledge. It is a widely used teaching pattern in colleges to train students' innovative ability, guiding students' research thinking through many forms. Teaching process is student-oriented and trains students' ability in self-development and self-improvement. Investigative study requires the collaboration between students and teachers. Teachers complete teaching tasks through guiding students' investigative learning and encourage students' to innovate in and rediscover knowledge. It avails training students' good learning habits and forming the learning style with virtuous cycle, mainly including the following three types:

1) Problem solving type: It aims at solving problems, training learners' consciousness of problems, critical thinking and practical ability to solve problems. In teaching, it can adopt the research method of self-help or group cooperation to carry out research on a task through students' social investigation, observation of simulation scene, experimental operation, problem discussion, collection of background information and report generation.

2) Project research type: It concentrates on a concept or principle and carries out practical teaching through research tools and methods. It guides students to explore independently and cooperate with others, arouses students' interests and initiative in knowledge and trains their personal and interpersonal communication ability and the construction ability in products, processes and systems. The contents of project research learning derive from practical problems in life, requiring students to integrate and build knowledge independently. Students can explore ways and methods to solve problems through integration of multidisciplinary knowledge. It trains students' comprehensive ability and promotes them to grasp complicated concepts and skills in realistic life.

3) Scene simulation type: It places students in specific cognitive situation to simulate roles and participate in the real tasks in the scene. The selection of scenes should be complete. Students have right to propose new concepts and methods to solve problems through activities of independent design, understand significance and relations between things. Meanwhile, it guides students to think difficulties from the perspective of participators, and simulate methods of problem solving, experience the property of scene tasks and the whole process of goal realization to construct personalized cognitive ability. [4]

The teaching method of investigative study fully considers and defines the dominant position of students. Students develop from traditional passive receiver to active leader. It trains students' ability to build knowledge, strengthens the systematic learning of subject knowledge and then trains students' comprehensive ability. In the transformation of traditional teaching method, it helps learners to develop the consciousness of active learning and good learning habits, changes the traditional passive learning style and significantly promotes the development of students' good learning habits and training of comprehensive ability.

C. Apply Internet Technology to Meet Students' Learning Needs

With the acceleration of knowledge differentiation, students' needs of learning knowledge are increasingly diversified. The advantages of face-to-face teaching and online learning can be combined through internet technology to achieve effective learning. The application of internet technology in college teaching avails students to choose more "flexible" time, and choose "proper" learning technology to conform to "proper" learning style. Meanwhile, it passes "appropriate" ability to students to achieve the best learning effects and styles. (Singh, Reed, 2014) We can flexibly carry out face-to-face teaching and online teaching according to teaching contents and make students' learning more flexible and convenient.

1) Face-to-face teaching form: Teachers teach more course contents through traditional classroom teaching and provide some online course resources or study materials for students to learn independently at home, in classroom or laboratory. Teachers are required to assist students to learn online course contents in face-to-face teaching environment. For example, guide students to find learning resources and write learning objects and share their learning outcomes with teachers or companions through the internet. Students develop learning habits and methods of their own in independent learning. Teachers realize personalized guidance requirements in teaching process.

2) Tutoring type online learning: Students read teaching remarks, watch teaching videos, complete tests and assignments, get writing template and carry out project research on the internet. They arrange learning contents through freely adjusting their learning schedule and build knowledge. Although students can acquire course resources through mobile devices in school or other places, teachers should teach students in schools. The learning style effectively breaks the limitation of learning time caused by learning place, makes the best of learning time and realizes efficient utilization of online learning resources.

3) Online laboratory: It can realize online learning of laboratory and interact online. All courses and teaching activities complete in computer room. Students learn

independently through watching teaching videos and interact with teachers or students through video conference system or forum and E-mails. Although the online laboratory provides complete online courses for students, students learn in entity space of schools. Students learn independently or work in groups to complete most course units.

D. Reform Teaching Assessment Methods and Evaluate the Achievement of Students' Ability

The teaching assessment of "SCL" should attach more importance to the evaluation of students' learning ability and achievements and consider students' individual difference. Teachers timely guide students in learning, design courses and organize teaching activities to realize continuous improvement. The evaluation forms of students' ability are more flexible, including archives, interviews, reports and skill demonstration. The ability evaluation neither has the only standard nor stimulates which kind of form can establish reliability. The establishment of reliability and validity depends on the ability in completing tasks. The better the completion, the higher the evaluation will be. Situational and skill factors can be quantified through:

1) Specific course: Combine the development of students' ability and specific progress of each course and formulate achievement evaluation according to the index points of requirements for graduation. The evaluation methods should be diversified. The accumulation of results in the multiple evaluation ways is taken as the final assessment result of one course.

2) Multiple teaching links: Teaching links contribute to the formation of students' abilities. Courses that support the course system must embody the diversity of knowledge and present the consistency of ability training. Therefore, courses must be arranged according to the achievement effects and completely present ability of students required for graduation.

3) Ability-course evaluation: Establish the supporting relationship between graduation requirements and courses and give different weight coefficients according to the support strength of courses for index points of graduation requirements, take it as the target value of evaluation. The sum of weight coefficients of all courses that support the index points is one. It transforms the conceptual description of "graduation requirements" into the index point that can be judged and implements in teaching activities. Teaching activities and results can be evaluated and put on record. The realization of graduation requirements integrates with the quality of courses and teaching links, in order to establish the effective system to achieve and evaluate students' ability.

V. CONCLUSION

In conclusion, new educational development situation requires new education forms. Although colleges are led by many ideas in reform, the educational concept of "SCL" emphasizes the attention and exploration on "people" and meets the new requirements of society for innovative talents training. The reform paths of innovative talents in colleges can be found through reforming teaching pattern, teaching methods and assessment methods, in order to guarantee the training objectives and quality of applied talents.

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