

Flipped Classroom: Ability Training under Knowledge Economy- Strategic Transformation of Teaching Idea

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Abstract. Flipped classroom as a new teaching mode becomes a breakthrough of teaching reform. It not just changes knowledge learning in traditional classroom, but also should be understood as strategic reform of teaching idea oriented to ability training. Ability training should be based on practice foundation, and then ability system with the ultimate objective of innovation ability training is established. Teachers should apply constructivism learning theory to update teaching idea, become learning designer, instructor and promoter, confirm students' learning subject status and establish the incentive, supervision and assessment mechanism adapting ability training.

Introduction

Since American Bengalis Salman • Khan created Khan Academy (a website specializing in online education) in 2009 and MOOCs rose in 2011, Flipped Classroom has become a brand-new teaching mode and popularized worldwide so that students and teachers have more communications and exchanges. Hence, traditional course teaching system is altered to make it more suitable for individual demand of online course learners, which improves learning interest and efficiency. American *Globe and Mail* calls it “significant technological change influencing classroom teaching in 2011”.

Minnesota took the lead in carrying out “flipped classroom” in 2011. Then, many countries in the world actively explored and practiced teaching mode of “flipped classroom”. Today, various countries in the world including China have implemented “flipped classroom” to different degrees. Bill Gates said Salman • Khan “foresees the future of education and guides a revolution”.

Many universities in China regard “flipped classroom” as the entry point of teaching reform. Nanjing University, Wuhan University, Chongqing University and other famous universities deem “flipped classroom” construction as the emphasis of teaching reform. In theoretical research of flipped classroom, educators and scholars also make active explorations.

China's cognition of flipped classroom

At present, China's cognition of flipped classroom mainly involves the following representative views:

a) Flipped classroom is an effective approach to promote deep integration of information technology and education – the essence of flipped classroom is “first learning and then teaching”. The development of information technology greatly improves operability of “first learning and then teaching”.

b) The change of classroom teaching is the most important feature of flipped classroom – alter the orientation and function of four factors (teacher, student, teaching content and teaching media) and achieve leap-type teaching.

c) In higher engineering education, flipped classroom is superior to traditional classroom in learning autonomy, teamwork spirit, innovation spirit, classroom atmosphere and knowledge internalization.

d) Flipped classroom is a feedback-correction process under “learning mode mastery”.

e) An effective way to achieve flipped classroom is to reposition roles of teachers and students, make course teaching video and reconstruct classroom dialogue.

The above views start from different perspectives (or specific subject). Most views reasonably cognize flipped classroom and treat flipped classroom from the perspective of knowledge learning.

Flipped classroom receives extensive attention in the world as soon as it is proposed. This is not occasional at all. The in-depth cause is that it adapts internal appeal of social development. The author holds that flipped classroom “guides a revolution”, which is the result of rapid information technology development; its significance is more than better learning and knowledge construction; except a brand-new teaching mode, it should be deemed as strategic reform of educational idea.

This paper takes undergraduate education for example.

Cognition “ability”

Understanding of “ability”

Psychologists generally believe that ability is an individual mental characteristic which directly influences activity efficiency and makes the activity completed smoothly. Prof. Huang Guangyang holds that,

Concept connotation of “ability” is not just limited to a mental characteristic. Ability should be “the combination of various factors required to smoothly complete all kinds of practical or thinking activities”.

The author approves the opinion of Prof. Huang Guangyang. In the opinion of the author, all kinds of factors constituting ability are an organic complex with rich extensions. Only one factor cannot smoothly accomplish a practical activity or thinking activity. If relevant factors in the organic complex are more and unified better, an activity can be finished more effectively.

“Ability” orientation and “ability economy”

Ability orientation is closely related to social development stage and restricted by productivity development level and social economic system. After the era of agricultural economy and the era of industrial economy, science and technology developed fast in the late 20th century. We are now in an era of “globalization”, and the proposal of “knowledge economy” is accepted generally.

Previous agricultural economy and industrial economy are “hard driven” by tangible resources, while knowledge economy is “soft driven” by intangible resources and human resources.

Marxism holds that, “productive labor provides everyone with the opportunity for developing and projecting their ability, i.e. physical strength and brain”. “Knowledge economy” highly tallies with this view. Human all-round development cannot be separated from the specific era, environment and activity. Humans need to transform knowledge to ability and achieve human development in the process of showing their ability. Hence, “knowledge economy” emphasizes ability in essence. The author considers it may be more accurate to call “knowledge economy” “ability economy”.

Main abilities Chinese higher education should cultivate

As the era of knowledge economy comes, profound changes have taken place in society. The connotation of ability expands correspondingly, and the requirements for ability become higher and newer. Single ability requirement has changed to ability system requirement.

Outline of China’s Mid-and-long educational reform and Development Plan (2010-2020) indicates that “the contradiction between the demand of economic and social development for high-quality diversified talents and insufficient ability training exists in China”; “China’s education does not adapt China’s economic and social development requirements; students’ ability to adapt society and obtain employment and entrepreneurial ability are weak; innovative, practical and inter-disciplinary talents are short.”

The *Outline* proposes “to stick to ability first, optimize knowledge structure, enrich social practice, intensify ability training, and improve students’ learning ability, practical ability, innovation ability …” The author believes that learning ability, practical ability and innovation ability are three main abilities higher education urgently needs to cultivate., and they form ability system together with other main abilities.

The above eight abilities own certain hierarchy, but they are not completely separated. They have integrated and uniform relations. Practical ability is the foundation of other abilities.

Expression/communication ability decides learning ability and other abilities to a large extent. Learning ability makes our knowledge structure better adapt practical changes, while independent thinking and independent judgment are important learning abilities. Criticism and query promote innovation. The driving force of innovation comes from imagination. Innovation is a kind of core ability, the highest ability and also the ultimate goal of ability training.

Strategic position of flipped classroom in ability training

Talent training mode of Chinese higher education highly depends on “traditional classroom” and mainly to impart knowledge. Flipped classroom pays close attention to cultivating the ability to learn, apply and create knowledge. Its main manifestation is “task-oriented”, and it achieves “learning in practice”. In this sense, the significance of flipped classroom not just lies in altering traditional teaching mode, but it is a teaching idea based on ability training.

Theoretical basis of flipped classroom – “ability view” under constructivism learning theory

Constructivism learning theory mainly explains its viewpoint from three aspects: knowledge view, learning view and student view. The author thinks the three views contain “ability view”.

Knowledge view - practical ability

Knowledge view holds that “knowledge is not passively accepted, but constructed by the cognitive subject; knowledge is not discovered, but a tool and means invented by the subject to adapt the environment; the purpose of knowledge mastery is to survive.”

Learning view - learning ability

Learning view believes learning is a process where learners initiatively construct internal mental representation; learners do not passively receive external knowledge; learners construct their own meaning through unique information processing activity from different background and perspective.

Student view - innovation ability

Student view holds that learners do not enter the classroom with empty brain. They have formed rich experience in daily life and previous learning.

Practical ability, learning ability and innovation ability embodied in constructivism learning theory facilitate or depend on analysis/comprehensive ability, expression/communication ability, cooperation ability, critical ability and imagination ability etc. so as to form ability system. Flipped classroom is designed on the basis of constructivism learning theory, reflects internal rules of knowledge construction and ability training and establishes realistic possibility of ability training.

Flipped classroom overturns traditional classroom teaching idea

The process from knowledge imparting to ability training is qualitative leap of teaching idea. Ability training requirement for higher education proposed by knowledge economy decides traditional classroom with the main objective of importing knowledge to accepting knowledge must be altered fundamentally.

In reality, some flipped classrooms are nominal, and they are actually the improved version of traditional classroom. This is mainly because teaching idea is not really “flipped”. This paper lists several situations as follows:

Flipped classroom is equal to information-based teaching

For example, the functions of micro-classroom and MOOCs are overemphasized. Micro-classroom and MOOCs are the products of information age, and they can certainly provide much convenience for independent study, interaction and exchange, but they are just means of flipped classroom. Besides, flipped classroom does not appear today when information technology develops rapidly. Since it pays attention to ability training, it is still followed now.

Flipped classroom is understood as enhancement of interaction between teachers and students

Teachers spend much time in asking questions and require students to answer questions or express their opinions, which can facilitate students’ active thinking to a large extent. But it's worth noting that students are difficult to express valuable views without sufficient thinking, while excessive questions will bring mental pressure to students.

Arrange assignments and hand in assignments

Teacher arrange assignments such as paper writing, case analysis and survey report writing, and then students hand in them for scoring. This fails to break away from traditional teaching thought. Teachers do not know how students think and practice during completing the assignments. The results often lack originality.

Students teach

Students prepare courseware after class and then present it in class to share learning effects, which to some extent can train students' practical ability and expression ability. However, whether students deeply explore the contents they prepare is also unknown. They mostly repeat what the book says.

The reason for the above phenomena is that universities fail to really realize flipped classroom should be designed on the basis of ability training. If flipped classroom is cognized at the level of ability training strategy, the forms will not be restricted. Universities should enhance teaching system design and embody the meaning of flipped classroom from the perspective of teaching idea.

System design of flipped classroom

System design of flipped classroom should follow the following principles: comply with students' potential will of accepting flipped classroom, and establish scientific incentive, supervision and assessment mechanism; start from practical ability training and guide students to establish necessary ability system.

Task-driving

Ability training is based on practice through task driving. Students are required to complete the specified tasks within the set time. Teachers should provide necessary guidance for students. Some tasks should students' cooperation. Students should be grouped according to the equilibrium principle in advance. The application of information technology will help students fulfill tasks after class.

Result assessment

In classroom, teachers evaluate and score learning results through students' presentation, explanation and oral defense of task results. Besides, teachers put forward improvement measures through in-depth discussion and exchange. The evaluation process is learning inspection process. Of course, single teacher evaluation is not always objective, and teachers of the same course of similar courses may form an evaluation team. Additionally, it is very important to establish scientific and concrete evaluation criteria.

Final assessment

The proportion of result assessment in total score should be large enough to enhance ability training orientation. The paper test of many courses should not be abandoned, and the understanding and application of principles should be mainly assessed.

It is necessary to indicate that the key of effective design of flipped classroom is teachers' functions. Teachers should "own the ability to critically think and imagine the professional field"; "teachers should guide students to an idea, an ideal and unredeemed possibility..., provide a vision for development of students' ability, respect students' autonomous right and personality as well as their advantage and tendency, and give full play to students' ability and potential." In this way, classroom can be constructed to a real learning community.

This paper discusses theoretical basis, essential requirement, system design and implementation method of flipped classroom from the perspective of ability training. Concrete implementation of flipped classroom involves much meticulous work. This paper does not expound some technical problems in detail. The aim of this paper that all methods should be creatively applied, as long as they contribute to students' ability training and effective implementation of flipped classroom. This paper solely stresses that it is required to realize the new requirements of knowledge economy for ability and regard flipped classroom as a teaching idea to cognize and implement it.

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