Phenomenography-based Study on MOOC Deep Learning Mode

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ABSTRACT

Phenomenography is a kind of teaching methodology put forward and used by the research team of education at University of Gothenburg, Sweden. It is between the macro level and the micro level. In recent years, the empirical study carried out with phenomenography in Western education research field has been widely accepted. At the same time, it is worth noting whether MOOC will overturn traditional teaching methods in university. This has always been a hot topic from the fanatical pursuit of MOOC to rational reflection upon it. Education researchers around the world all hope to explore a new teaching model to improve the quality and efficiency of modern tertiary education by virtue of the power of MOOC, which makes it possible to apply phenomenography to the MOOC teaching mode. This paper endeavors to carry out essential analysis on the quantity difference and qualitative difference involved in the individual experience phenomenon to improve the influential factors restricting MOOC itself, thus releasing the vitality of the micro subject (teachers and students) and making up for the limitations of MOOC compared with traditional teaching.

Keywords: phenomenography, MOOC, deep learning, education research method

INTRODUCTION

With the successful application of Internet technology in education, the concept of open education has gained social recognition, and social learning has become the main form of learning (Fox, 2013). MOOC has gradually become the global education mode. It originates from the open global movement, rises in the studying concept of connectivity, and thrives on the learning concept of behaviorism (Zhang et al., 2017). At present, MOOC teaching mode itself has entered the new stage of rational reflection and continuing development, so it is urgent for us to form new paradigm and philosophy to provide new theoretical support for its development. This provides good theoretical support and practical value for the application of phenomenography in MOOC teaching mode.

Phenomenography is an education empirical research method (Marton, 1981). In the process of research, researchers found that student individuals are qualitatively different in understanding the same content. The reason for the difference is that students use different ways of understanding, thus having different conceptions about the same reality (i.e. teaching content). This kind of theory can serve as a beneficial complement of the previous theoretical support for MOOC.

According to the theoretical principle of phenomenography, the deep learning of MOOC can be broken down into five stages: exploring the difference of students' learning; studying the differences in the way people experience the world; forming a deep learning mode to explain students' understanding of the way used to experience the world; using dynamic theory to describe and analyze classroom teaching process; using dynamic theory to observe the driving factors that influence individual creativity. The first two stages fall into the category of early phenomenography, mainly studying the mode of understanding of the qualitative differences of the empirical phenomena; the last three stages belong to the category of "new" phenomenography, advocating to use dynamic change to explain and promote the ad hoc fashion of empirical phenomena.

PREMISE AND ASSUMPTION OF THE MODE

The practical application of phenomenography in MOOC requires the setting of specific fundamental assumptions. Phenomenography can guide specific research methods targeting specific research objects through making truthful description of the differences of the concepts generated when people experience specific content. It is a methodology with universal significance and is applicable to many related fields. We can define it as a methodology in the mediation sense. It is transferable within a certain research range and can guide and be applied to specific practice.

(1) Scenario Hypothesis. Different from the viewpoint of decontextualization in traditional cognitive psychology, the learning situation plays an important role in phenomenography. Traditional phenomenography focuses on the teaching beliefs, teaching environment perception and teaching methods of teachers and students in a particular teaching environment (Jamie et al., 2015). Different students have different beliefs, perceptions and approaches to the same curriculum or the same student has different beliefs, perceptions and means toward different courses, so there is a difference between deep learners and shallow learners. If the learning style or environmental perception of the students is measured out of the specific environment, then it diverges from the basic position of phenomenography, which actually reflects the contradiction between subjectivity and objectivity in MOOC. The learning situation is the place where the physical and social situations interact with the individual, generally including the physical situation, atmosphere and background event, which are the foundation and core of the construction of the apparent field domain in in-depth leaning (Anders, 2015). Therefore, the assumption of teaching situation in traditional phenomenography is divided into two parts: phenomenal (virtual) classroom situation and classroom situation in essence (real classroom situation). The knowledge acquired through surface learning is not absolute objective knowledge. In the interaction between the individual and the outside world, the way in which individuals understand the concrete realities is changing constantly, and the activity of deep learning will potentially occur.

(2) Individual Hypothesis. Different from the identification of subject in traditional MOOC teaching mode, the subject identified in MOOC teaching mode is the teaching content, mode and means. However, from the perspective of phenomenography, teachers (individuals) and students (individuals) are identified as the subjects of the whole teaching process and the teaching content, mode and means of MOOC are explained as the intermediate links where the subject and object influence each other. The whole teaching process emphasizes individual differences, especially the differences of individuals when they understand the reality. The ideas of individuals or a community is not invariable, even under the same time and space conditions, the individual or community may have different understanding of the same reality. Phenomenography is not only to explore the difference between individual concepts, but to reveal the qualitative difference between these differences. In the "subject-intermediary-object" movement, we try to awaken the totality principle, which is to seek the dynamic and generative aspects of the individual in MOOC.

(3) Cognitive Hypothesis. The main research object of phenomenography is the individual cognition. When it is applied to MOOC, the research object becomes the cognition of teachers (individuals) and students (individuals). The individuality of the research object determines the unique ways of cognition in phenomenography-description. Deep learning is a process of creating knowledge. Knowledge is transformed and created in the process of experience. Experiential learning refers to the introspection and understanding of cognition, emotions, behavior and knowledge through repeated observation, practice, perception and exploration after personal experience. Therefore, detailed and truthful description of individual cognition is the basic premise to obtain the universal meaning of the objective concept. Phenomenography takes description as the basic way to learn individual concept, emphasizing to obtain rich data through detailed and authentic description of individual concepts. It is a learning process of knowing things, mastering knowledge and improving ability and is also a process to form habits, attitude and psychological characters. In other words, driven by certain idea, intersubjective joint conduct among multiple individuals may occur, which is also the necessary condition to grasp certain qualitative conclusions.
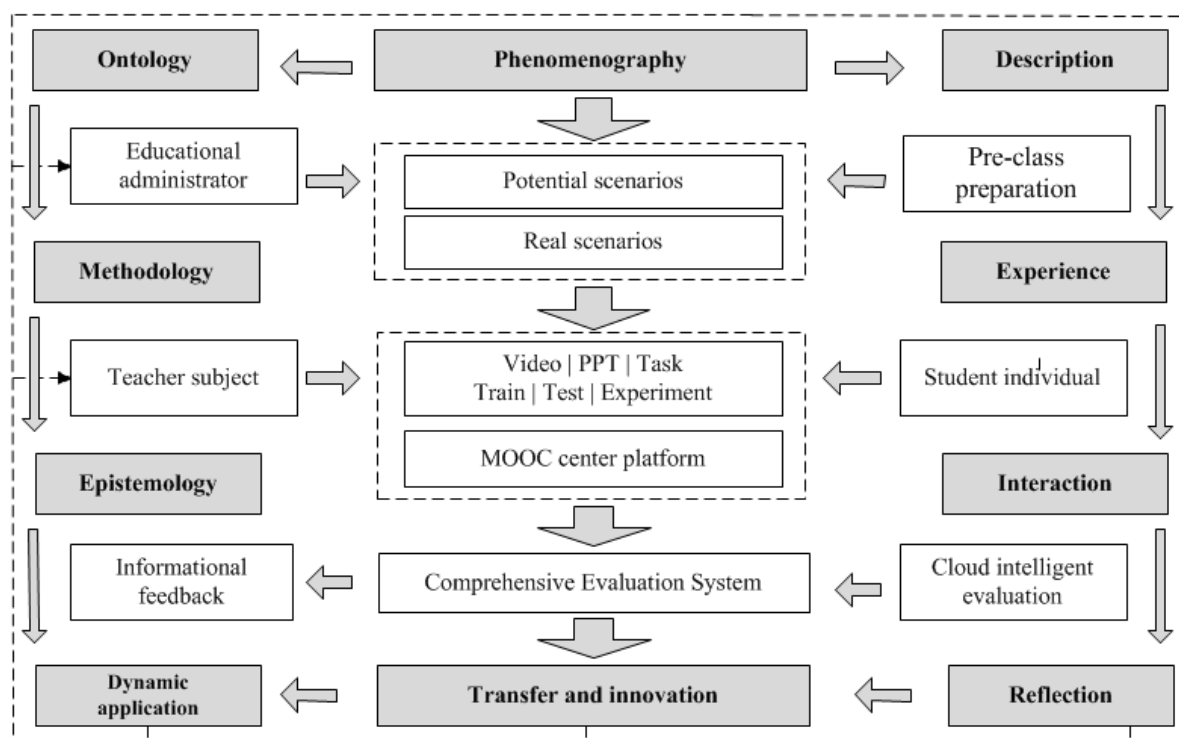
Figure 1. The deep learning model of MOOC based on the perspective of Phenomenography

ANALYSIS OF MODE COMPOSITION FACTORS

As shown in (**Figure 1**), MOOCs constitute a special platform for deep learning, which has a dual special nature of "presence" and "non-presence". On the one hand, the physical space formed with online teaching, online learning, platform construction, learning style and technical means as carriers have endowed the MOOC platform with the specialty of "presence"; on the other hand, the intersubjectivity between the teachers (individuals) and students (individuals) has endowed the MOOC platform with the specialty of "non-presence". Among them, the mutual recognition among individuals and the empirical reflection constitute the core content of the concept of "description" in phenomenography. The content contained in the "description" itself is a collection of individual experiences, and the mutual influence among and experiential reflection of individuals are also the important variables to distinguish surface learning. The design and construction of MOOC deep learning space all requires the administrators to improve the medium link constituted by quality evaluation, dynamic application, problem solution, and knowledge construction based on the content of "description", therefore the common properties of teachers (individuals) and students (individuals) can be improved (Rolandsson et al., 2017) and the vitality of micro subject can be constantly released.

The Scenario of the Unity of Reality and Potential

In a sense, the "description" in phenomenography includes the dimension of mutual recognition among individuals and experiential reflection. Generally speaking, taking interviews as an example, the experience, understanding, feelings and other "descriptions" with obvious personalized characteristics of the interviewee (students and teachers) about the MOOC content can be obtained. On this basis, if the individual experience and understanding in the classroom are collected to the degree of true "description" (Jones et al., 2016), we shall focus on the individual ideas and opinions about a realistic scenario, and explore the common features that may be obtained through comparing the views. Based on these universal features, a vivid experiential virtual learning space, which integrates sound, pictures, scenes, figures (characters) and so on, is constructed. It shifts the "potential" (non-presence) scene to the "real" scene. And the phenomenon in the real situation presents as the change and improvement of online teaching, online learning, platform construction, learning methods, and technical means. This endows students an immersive feeling in MOOC learning, thus achieving a high integration of real scenarios and potential scenarios, providing a necessary atmosphere for the deep learning of MOOC.

Mutual Recognition between Subject and Object

MOOC are facing big challenge despite its worldwide recognition (Greene et al., 2015). This challenge is mainly reflected in the lack of creative ability of MOOC itself. Yet the ontological assumption of phenomenography seems to find the key factors that restrict the development of MOOC. From the present situation, the MOOC created by administrators and teachers have dominated the teachers and students. MOOC, which has brought convenience and efficiency, has restricted the development of classroom teaching (Ebner, 2016), showing that learners' learning persistence is not strong, teachers' burden is heavier and the teaching methods and learning modes are single. Therefore, each subject (including administrators, teachers, students, etc.) needs cooperation, competition and game to play the dynamic role. Teachers can make time to organize a variety of classroom activities, which can be completed by the division and collaboration of group members and the process itself is interactive. The students provide different description feedback to the teachers by displaying their works in the form of video, audio, PPT, PDF and so on. Then the teachers improve the method, process and theory of MOOC in view of the existing problems. This method provides the right of mutual recognition between the subject and the object, and the active role of subject can be played.

Cognition of the Unity of Phenomenon and Essence

Deep learning model is the essential requirement of construction and development of MOOCs, and also the basic principle of phenomenography. It can be learned by retrospective self-observation, analysis, evaluation, practice, transformation, etc. Deep learning is the process of students' individual cognition, and the reflection of the results, including process reflection, result reflection, environmental reflection, and motivation reflection. Students begin to take their own experience, understanding, behavior or their own physical and mental structure as the object. Phenomenography holds that it is of great help to promote the transformation of individual cognition through exploring the individual students' different experience, understanding and perception of the real teaching situation. In essence, deep learning runs through the whole process of learning and is the "learning of learning". That is, the learning process is also the result. The essence of reflection is sublation, which can improve students' cognitive ability and facilitate students' understanding and internalization of what they have learned (Guo et al., 2017). It helps students to summarize, organize, reflect and discard the phenomena displayed by the differences of the cognitive objects, so as to realize the essential grasp of the teaching contents. And it constructs a brand new teaching cognition to improve the quality and efficiency of modern higher education.

CONCLUSIONS AND SUGGESTIONS

Conclusions

First, the application of phenomenography in MOOC teaching is conducive to clearly positioning the development direction of situation in MOOCs. This method can effectively connect the phenomenal (potential) classroom situation and the intrinsic (real) classroom situation to make them work together, thus constructing a deep-learning field integrating situation, subject and cognition and setting up a different "intra-domain" situation different with the shallow learning field to create "intra-field" advantage. The special form and power in the field will exert impact on the student subject in the field, which will effectively affect the student individuals in the field and improve the attraction and vitality of the "inside field" of MOOCs.

Second, the application of phenomenography in MOOC teaching can clearly position the subjective role of the teachers and students of the intra-field of MOOCs and can effectively identify the key driving factors of individual teachers and students. Based on these factors, the creativity and vitality of the micro subject can be further motivated and released, which is helpful for teachers to creatively carry out teaching through guiding students to "enter the field" and keeping them "in presence", and reducing students' "exiting halfway", thus promoting the occurrence of deep learning.

Third, as shown in **Figure 2**, the "description" in phenomenography can be regarded as the basis of retrospection of MOOC teaching cognition. The situation, interaction, experience and retrospection can become the key elements for knowledge construction and understanding in the potential field of deep learning, in knowledge transfer and application, in problem solving and innovation. Students can critically learn new ideas and facts and incorporate them into their original cognitive structures, which is conductive to the transformation from the surface learning of (students) to deep learning.
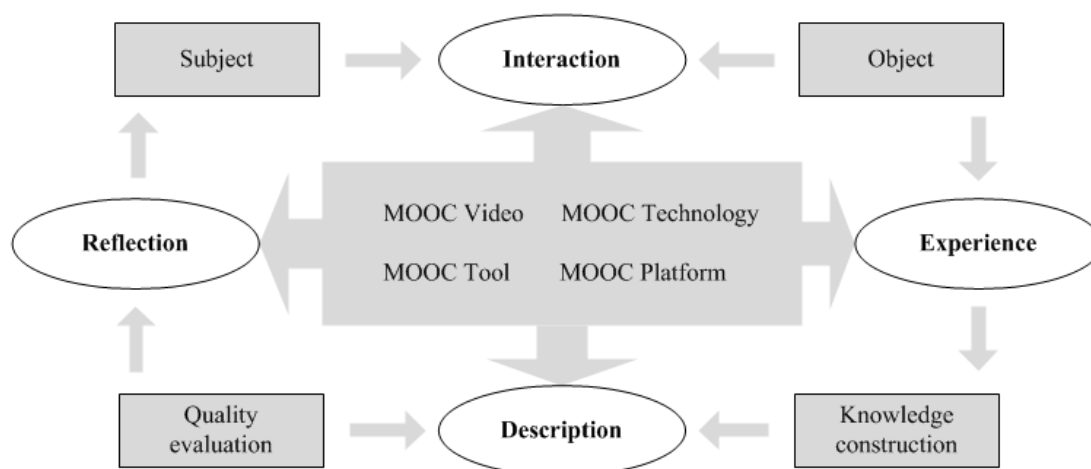
Figure 2. The schematic diagram of MOOC deep learning process

Suggestions

First, the acquisition, processing and utilization of MOOC resources should be based on the methodology principle established in phenomenology. The application of the priority development elements established on the basis of these principles can save the capital input in the design of classroom teaching resources. School administrators are the primary dominators of capital and power in the learning field, at the same time, they shall pay attention to the excavation, usage and of transfer the large amount of cultural capital, social capital and symbolic capital owned by the teachers. The administrators shall take advantage of their position power to deploy resources and capital to the "intra-domain" of deep learning, and honestly provide feedback to teachers about the real demand of student individual in MOOCs teaching (Perna et al., 2014). They also shall actively promote teaching reform, making efforts to construct and set up the content, process, mechanism and atmosphere for the interaction, experience and reflective activity. They shall encourage students to agree with and participate in the reform, and fully release the vitality of the micro subjects, such as school administrators, teachers and students, thus making MOOCs teaching more targeted and effective. It is suggested to improve the carrier, conditions and tools to enhance the important role of MOOCs medium link among subjects.

Second, it is suggested to establish the MOOC education quality comprehensive evaluation system. To form a "large MOOC" teaching layout through shaping positive and healthy campus culture, constructing the deep learning community, establishing and perfecting the incentive mechanism and establishing the supporting rules system (Norberg et al., 2015). At the same time, the combination of local evaluation and overall evaluation should be achieved. From a local point of view, the priority and dominant role of teachers and learners shall be highlighted. The whole learning process of students shall be reflected in the evaluation. It is necessary to rethink the negative problems brought by environment, carrier, condition and tools based on the interaction, experience and retrospection activities of teachers and students. The MOOC education comprehensive evaluation index and content shall be scientifically improved, thus making the innovative reform and deep-learning of administrators, teachers and students more targeted and operable. As a whole, MOOC teaching reform adheres to multiple quality concepts of popular education, focusing on personalized talent cultivation. MOOC design, application and implementation shall be evaluated by multiple evaluation subjects via multiple evaluation ways.

ACKNOWLEDGEMENT

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