Discussion on the Construction of Mathematics Teaching Culture under Run-through Cultivation Model

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Abstract. In this study, the construction of mathematics teaching culture in vocational colleges under run-through cultivation model has been discussed. Based on conceptual analysis of mathematics teaching culture, a vague and broad concept, problems existing in mathematics teaching process have been tackled and solved under run-through cultivation model by introducing vocational education culture and mathematics teaching culture into curriculum implementation.

Introduction

Teaching culture is the teaching itself being in the concrete times and the concrete region [1]. In its character, teaching culture is a kind of common form of teaching state that goes beyond subjects and teachers, and it is an organic entirety, which contains teaching life process and its ecological environment [2]. The key element of teaching culture can be divided to two parts. One is main body element, namely, life style of teaching; the other is supporting element which includes teaching collective unconscious, teaching customs and habits, teaching system and teaching thought.

The research of teaching culture began very early in foreign country [3]. The concept of teaching culture is derived from people's attention to school culture [4]. Observation, questionnaire survey, interview and content analysis are the commonly used method for taking further research on the survival status and the life style of teachers and students. In the 1930s, Waller, an American scholar, proposed the concept of classroom ecology, the sprout of teaching culture, in “The sociology of teaching”. Teaching culture depended not only on the teaching system and learning environment, but also on the development of teachers' specialization. Forty years later, in “Teacher-sociological research”, Lottie, an American sociologist, pointed out that uncertainties existing in teaching processes would make teachers' lack of communication in the classroom environment. In 1986, “Handbook of Research on Teaching” was published by the American Educational Research Association (AERA) and first presented a chapter for the discussion about teaching culture. After that, a wide spread of research on teaching culture were carried out. Williams' research focused mainly on the classification of teaching culture and their links with the efficiency teacher's work efficiency. Since 1990s, Hargreaves, scholars of Canada, is the representative of this study area. He thinks that teaching culture is formed by the teachers' belief, values and habits which are swayed by similar restrictions, as well as the assumed mode of behavior. In his opinion, teaching culture was the biggest obstacle in curriculum and instructional reform. In other words, teaching culture was the foundation of building. In order to improve curriculum and instructional reform and obtain the best results, teaching culture must change. This change means that teachers must reconstruct the past experience and change the way of life. In summary, teaching culture includes two parts: teaching life process and teaching ecological environment. Teaching life process is the motion process of teaching life style, i.e., the way of teaching life. Teaching ecological environment is the mental factor that supports the specific teaching life style. On the other hand, the element of cultural can be divided into the explicit teaching life style and implicit supporting element, including teaching collective unconscious (the psychological trend existing in the group of educators), teaching customs and habits, teaching system and teaching thought. In other words, teaching culture, formulated from teaching activities, is the value outlook and behavior in relation to “teaching and learning”.

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The research of teaching culture started later in China, but considerable research had been conducted since 2002[5]. Most of the researches focus not only on the concept, connotation, characteristic and status of teaching culture, but also on problems encountered during transition process. However, there is a lack of research on mathematics teaching culture, especially on that in vocational education. Further study need to be conducted.

Therefore, mathematics teaching culture in vocational education can be interpreted as the value outlook and behavior obtained from professional teaching activities. Mathematics teaching process and teaching results should be well integrated under run-through cultivation model to realize the fusion of knowledge and skill, process and methods, as well as the emotion, attitude and value outlook of mathematics teaching in vocational education.

Mathematics Teaching Culture in Vocational Colleges under Run-through Cultivation Model

Integration of Mathematics and Professional Skills Training

The weakening of basic subject and the separation of basic subject and professional skills training are existed phenomenon in vocational colleges. It impels us to rethink whether there is a deeper reason behind this phenomenon. The relationship between teaching and culture has always been neglected due to their implicit correlation. Through tackling the value outlook and behavior of teaching, it opens a new road of teaching theories study. From a cultural perspective, based on run-through cultivation model, problems for mathematics teaching in vocational education can be in-depth analyzed from teaching cultural aspect, exploring the characteristics and value of mathematics teaching culture in vocational education and determining what kind of mathematics students should learn and how to learn mathematics.

Mathematics teaching culture under run-through cultivation model can be interpreted as the value outlook and behavior obtained from professional, internationalized and modernized teaching activities. Compared with common teaching culture, it has specific connotation, i.e., from the view of professional analysis, the objective is to improve students' thinking accomplishment, innovation ability and international communication ability by using modern education technology. This requires an integration of mathematics teaching process and teaching results under run-through cultivation model to realize the fusion of knowledge and skill, process and methods, as well as emotion and attitude. Therefore, how to make mathematics teaching accommodate run-through cultivation model with professional, internationalized and modernized “mathematical flavor” becomes a pressing research subject need to be tackled to reshape the cultural taste of mathematics teaching.

Taking Vocational Ability and Human All-round Development as Objective

At present, Chinese vocational education attaches great importance to the cultivating pattern of "cooperation between school and enterprise" and "combing learning with working". Mathematics curriculum mode of vocational colleges has gone through several development stages, including "compressed biscuits" mode learned from common colleges and universities, curriculum development mode from foreign colleges and curriculum development mode with Chinese characteristics, finally generating higher vocational college teaching culture. Under run-through cultivation model, teaching culture in higher vocational colleges has shifted the attentions from "practice" to "enterprise", "Vocational ability" and "students' subject position", and then to "reconstruct", "integration of teaching, learning and doing" and "sustainable development of humanity". The teaching characteristics of higher vocational colleges which have established self-discourse system can be summed up in that teachers and students can embody unique behaviors, spirit and relationship characteristics during teaching process. Under run-through cultivation model, mathematics teaching should aim to cultivate the students' vocational ability, and ultimately to realize human all-round development. At the same time, mathematics teaching should lay a foundation for students' lifelong learning and sustainable development, and introduce the concept of people-oriented holistic viewpoint and multi-intelligence based talent viewpoint into the professional education.
Construction of Mathematics Teaching Culture should Accommodate the Requirement of Vocational Education

At present, China is in social-cultural transformation period. Most of problems in teaching process are of cultural natural. Therefore, this study tries to reflect and understand the problems in teaching process from the view of culture and find the basic reason for them in vocational education to offer a teaching reform direction for teachers. How to make mathematics teaching have professional “mathematical flavor” in vocational education and reshape the cultural taste of mathematics teaching under run-through cultivation model become pressing research subject need to be tackled.

Higher vocational education is different from general higher education for training talents working in the front line of production, construction, service and management. To become an education system with independent subject position, vocational education should neither detach from things emulated, nor rush to be novel. During the processes of pursing its historical mission, its own culture should be accumulated, inherited and developed. Long-term teaching practices shows that curriculum is the core of establishing higher vocational education and cultural construction plays an important role in further curriculum reform. To realize the essence of education—culture education, we can start from the following aspects:

1. Analysis of value outlook of mathematics teaching in vocational education, including mathematical historians, mathematics knowledge, mathematical modeling and so on. Through revealing the connotation of mathematics teaching culture, the direction for construction of mathematics teaching culture can be kept. The objective of mathematics teaching culture construction under run-though cultivation model should be disclosed and the teaching content, teaching norms, values and behavior should be straightened out

2. Disclose training strategies and methods for construction of mathematics teaching culture under run-through cultivation model, such as development of innovative teaching mode and utilization of multiple tutor system.

3. Using multivariate evaluation method instead of theory test primarily appraisal way. Focus on the evaluation of mathematics application and humanities quality education considering students' learning attitude, learning process and learning results.

4. Development of digitized teaching resources, such as construction of mathematical teaching resources platform; design of practical training projects, such as, mathematical modeling project.

5. Vocational education opens the run-through cultivation road. In other words, students would be in vocational education teaching cultural immediately after graduated from junior high school. When complete the vocational training, including basic theoretical knowledge and practices, they can obtain vocational education bachelor's degree. Mathematics is no longer a student entrance ticket but a paving stone of professional services. It is necessary to transmit mathematics teaching culture from the perspective of career development.

Conclusion

In this study, the construction of mathematics teaching culture in vocational colleges under run-through cultivation has been studied. The situation for construction of mathematics teaching culture, and the problems under run-through cultivation model have been analyzed. Results indicates that mathematics should be integrated with professional skills training; it is necessary to take vocational ability and human all-round development as objective; construction of mathematics teaching culture should accommodate the requirement of vocational education; and it is significant to introduce vocational education culture and mathematics teaching culture into curriculum implementation.

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References


