

# Construction of “Golden Courses” for Higher Vocational Water Conservancy Majors: Current Situation, Problems, and Solutions

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**Abstract**—“Golden course” is a kind of demonstrating course. To construct “golden courses” for higher vocational water conservancy majors is to construct the whole level of constructional courses, including ideological, formal, perceived, operational and experiential levels. The present higher vocational water conservancy major curriculum and instruction researches reflect how the courses are built. It is found that the course research network is significantly discrete, and the course construction has a lot of homogeneity. Therefore, the course construction is faced with difficulties such as improper definition of the course, low curriculum and instruction research enthusiasm, lack of close ties to industry and curriculum instruction, no completely constructed classical courses, and lack of research funding for curriculum instruction. We should construct “golden courses” by constructing curriculum construction ecology, constructing typical “golden courses”, matching abundant funds and promoting scientific management.

**Keywords**—higher vocational education, curriculum, water conservancy, gold course

## I. INTRODUCTION

According to the international standard classification of education, institutions of higher learning are classified as "comprehensive research universities", "specialized applied universities or colleges of multi-subject or single-subject nature", and "vocational and skilled institutions of higher learning". According to China's national conditions, "professional skills in colleges and universities", namely "in higher vocational colleges", aim to cultivate engaged in the production, management and service first line specific work of technical personnel, with differences between "research in the field of natural, social and humanistic science talent" and solid theoretical basis for different levels of senior specialized talents and management personnel.

Higher vocational education is one of the essential parts of higher education, and the quality of higher vocational personnel training is the core factor of regional economic development. However, the ways and methods of talent training in higher vocational colleges are still being explored. The core element of talent cultivation is curriculum. It is of strategic significance to study how to construct "golden course" in higher vocational colleges. Taking water conservancy as an example, this paper explains how to build "golden courses" in

higher vocational colleges, which are featured with "advanced", "innovative", and "difficult".

## II. INTERPRETATION OF "GOLDEN COURSE" CONSTRUCTION IN HIGHER VOCATIONAL COLLEGES

### A. Structured Curriculum: knowledge is something that students actively construct and is constantly changing

"Golden course" has "high order", organic integration of knowledge, ability, and quality; "innovation", the content of the course is contemporary, the teaching form reflects advanced and interactive, and the learning results are exploratory and individual. "Challenge degree" means that the course must be of certain difficulty [1]. The curriculum system of higher vocational colleges has its own characteristics. The content of the curriculum emphasizes the application of theory and advanced technology, and needs to be closely related to the industrial development, technological progress and regional market demand, in order to serve the development of local economy [2-6].

In such a course, knowledge is something that students actively construct and is constantly changing. The curriculum is a means to promote and help students explore and experience the world around them. The objectives are flexible and take into account the needs of different students. The focus of the course should be on the procedures that lead to independent learning, not only on the subject matter. The "golden course" in higher vocational colleges must be restructured.

The key to the "higher order" certification is that the graduates should have comprehensive ability and advanced thinking to solve applied complex problems in their future career. Its "innovation" is reflected in that the course content can better meet the needs of regional economic development. In course activities, students can build their own application-oriented knowledge system and have the ability to conduct personalized exploration.

### B. Construction at All Levels: ideological, formal, perceived, operational and experiential levels

Curriculum construction has different levels. Ideal courses that proposed by research institutions, academic groups and curriculum experts; formal courses required by curriculum plans, curriculum standards and teaching materials, which are

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prescribed by the administrative department of education; comprehensive courses by teachers; operational courses, which are actually implemented in the classroom; and experiential courses that students actually experience [7-10].

It is the basic way to construct the "golden course" in higher vocational education. The characteristics of structured courses in higher vocational colleges emphasize that similar courses in different regions are not preset, closed and static. Therefore, the construction of "golden course" cannot be in the form of "hierarchy" to teach students the planning, design and implementation of scientific and unique teaching texts from the level of curriculum development and design to the level of classroom teaching. It is impossible to rely on prior provisions to faithfully implement, nor to rely only on the administrative order of the college to solve the problems in curriculum construction. Curriculum construction has undergone several transformations from curriculum decision-makers and compilers to teachers and students, with different levels, and needs to see the whole picture of the curriculum and pay attention to different levels.

### III. CURRENT SITUATION OF WATER CONSERVANCY CURRICULUM CONSTRUCTION

#### A. *The Dispersion of Course Research Relation Network Is Significant*

Based on the research works cited in water conservancy curriculum construction, we have found that the clustering degree is high, and the keywords targeted by the research are relatively concentrated. However, the literature citation rate is low, and the mutual citation rate is low. There is no authoritative research literature. At the same time, the nodes of author network cooperation graph are discretized significantly, which indicates that there is no high degree of cooperation among authors in the top three institutions in terms of the number of published articles.

#### B. *The Content of Curriculum Construction Is Homogeneous*

The study on the water conservancy curriculum construction presents horizontal and vertical homogeneity: the curriculum construction of different types of higher education is homogeneous; and the curriculum construction of different time is homogenized. Specifically, in the course construction, the constructional characteristics that the course should have been controlled and facilitated, and the researchers' awareness of the category characteristics of higher vocational courses should be formed.

The connotation interpretation of higher vocational courses is diversified and the connotation construction is in a groping stage. Some curriculum construction research still draws lessons from research-oriented universities and focuses on the logic of subject teaching operation instead of cultivating students' practical application ability of knowledge. Although the course construction from "control" to "empowerment" progresses step by step, the curriculum construction is still relatively single, and focuses on "understanding curriculum" and "the operation of the course". Some opinions have been put forward about how to solve the curriculum construction in

trouble, but the proposed curriculum practice is not ideal, and the boundaries of the scheme hierarchy are fuzzy. The difficulties and their solutions are not at the same level, or have not yet reached the level of construction status.

At the same time, the water conservancy curriculum research and the water conservancy research topics do not match. There is no significant difference in the study of water conservancy courses in different areas. Therefore, at the same level and the same kind of education, the curriculum construction in different areas still presents homogeneity.

#### C. *Difficulties in the Construction of "Golden Courses" for Water Conservancy Majors*

The current situation of curriculum research reflects the dilemma of curriculum construction, and the construction of "golden course" is faced with five major difficulties.

##### 1) *First, construction enthusiasm is not high*

Compared with the water conservancy science and technology research, there is a big gap between the water conservancy curriculum research and the water conservancy science and technology research. The simultaneous search of water conservancy courses and water conservancy science and technology research in higher vocational colleges and the research volume are significant. It also reflects that the boundary of water conservancy higher education has become increasingly clear and the curriculum construction of higher vocational education has developed in the past decade. Through the analysis of the author's institution, it is found that the higher education institution is the key to water conservancy research, and the water conservancy industry educators have paid more attention to the research of water conservancy technology than the curriculum research.

##### 2) *Second, the content of the course is not clear*

The non-standard use of keywords in water conservancy curriculum research reflects the unclear connotation of curriculum construction. Through the research topic distribution, it is found that not only the top ten keywords in the number of published articles in the first five years and the second five years overlap, but also the connotation and boundary of these keywords are unclear.

It is also found out that there are a lot of reports and summaries about curriculum construction researches for the curriculum teaching practice, in which the curriculum design and implementation of epistemology are not clear. For example, the content design of higher vocational courses matches the teaching practice design of research-oriented higher vocational colleges but the course content is similar to the teaching content of research-oriented higher vocational colleges.

##### 3) *Third, research topics are not closely related to the industry development*

The difference of keywords between curriculum research and scientific and technological research shows that curriculum construction is not closely related to the industrial development. However, the study of water conservancy courses shows that the present water conservancy courses have undergone little changes in the past ten years, and that the regional differences are not significant. The change of teaching methods is not

driven by industry and the development of regional market economy. In the past ten years, some areas of China have been carrying out digital transformation of water conservancy, such as building digital platforms for flood control and disaster reduction in river basins. However, only one author from Hehai University published a paper related to digital learning resources according to the search on the knowledge net.

4) *Fourth, the research achievements are not typical to demonstrate around*

Compared with the research of science and technology, the difference of the highest cited number between the curriculum research and the research of science and technology indicates that the achievements of curriculum construction are not typical. Although the curriculum research results are increasingly fruitful, the overall volume is not high. Through the analysis of the mutual citation network keyword co-occurrence network and author cooperation network in literature, it is found out that the relationship network is discretized significantly. According to the research topic distribution of water conservancy courses, it is found out that the content of water conservancy courses is homogeneous in terms of time, education category and region. Therefore, water conservancy curriculum research is still in its initial stage, and the research results are empirical, basic and repeatable. The high repetition rate but low citation rate of the research results also reflect that the classic achievements of curriculum construction have not been formed or the research relationship network has yet to be established.

5) *Fifth, research funding is not sufficient.*

Compared with scientific and technological research, the curriculum research has much less funding, which reflects that the external support for curriculum construction is still at a very low level.

#### IV. CONSTRUCTION PATH OF "GOLDEN COURSE" FOR WATER CONSERVANCY MAJORS

In view of the five difficulties in the course construction of water conservancy major in higher vocational colleges, the following suggestions are proposed to construct "golden course" at all levels from the course design to the implementation.

##### A. *Constructing the Ecology of Curriculum Construction*

The co-ecology of water conservancy curriculum research and education research and the co-ecology of water conservancy technology and water conservancy curriculum research should be constructed.

Water conservancy curriculum research should be carried out on the basis of the abundant achievements in education research on the classification of education, and on the basis of the existing connotation research achievements in higher vocational education, especially on the achievements in curriculum and teaching research on the construction of curriculum.

The co-ecology of curriculum and teaching research can effectively improve the quality of water conservancy curriculum research results. Research feedback on curriculum

construction and high-quality curriculum research results can reversely promote the dissemination of research results of the construction of "golden course", and promote the overall construction of "golden course" into a new stage.

The co-ecology of water conservancy science and technology and water conservancy curriculum is not only conducive to the close integration of water conservancy curriculum with the development of the industry, but can also adjust the training of water conservancy talents through water conservancy education in order that the water conservancy education supply can match the development needs of the water conservancy industry.

Curriculum construction and talent training are also the fundamental driving force for the development of water conservancy technology.

##### B. *Creating a Typical "Golden Course"*

The typical "golden course" is a universal demonstration course of water conservancy, which is the universal basic course for water conservancy majors. Typical "golden course" can share the content design method, teaching practice procedure or teaching resource development procedure of typical construction course. For example, the construction course of water conservancy majors based on the "Internet +" mixed teaching mode can be shared. By studying or teaching these typical courses, teachers can experience and learn the design and implementation of constructive courses.

The homogenization of water conservancy courses shows that the higher vocational institutions in China share the same or similar teaching difficulties. The common demand of research requires a typical "golden course", which should be built on the basis of water conservancy course research and educational research, especially for the common ecology of course, and teaching research, and the common ecology of water conservancy technology and water conservancy course.

Through this process, not only the teaching and research achievements of higher education and higher vocational colleges are used for reference, but the course content can also closely integrate the development of water conservancy industry and regional characteristics.

##### C. *Gaining Sufficient Funds*

More abundant funds should be allocated for curriculum construction and curriculum construction research. Course research and funding matching scientific research are very different. Water conservancy professional curriculum research scholars at the same time are also water conservancy science and technology research of scholars, they have contributed to the remarkable wisdom and achievement in the study of water conservancy science and technology, but their study enthusiasm is not high, their productive quality is relatively low, which is not due to their scientific research abilities, but to insufficient funding or allocation of the funds.

We should allocate more abundant special funds for curriculum research or expand the proportion of funds available for curriculum research in the special funds for specialty construction. More research and publication in high-

quality curriculum research is the driving force for the sustainable development of the construction of "golden course" in higher vocational colleges in China.

#### *D. Promoting Scientific Management*

To promote scientific management, a role of the management system of the adjustment should be played through the analysis of the existing resources configuration, and to appropriately increase resources in an effective way under the condition of the existing course construction in order to solve the problems effectively in the construction of "golden course", to promote teachers' enthusiasm, low contact with industry, untypical construction achievement, and insufficient research funding.

First of all, local water conservancy science and technology and water conservancy course construction funds should be shared among researchers and professors, and local water conservancy scientific and technological research should be encouraged to actively support water conservancy course construction through systematic construction, such as water conservancy scientific and technological research under the provincial water resources department. Water conservancy science and technology should be encouraged to enter the institutes with relevant application which have water conservancy scientific and technological achievements in regional universities. For example, in the water conservancy scientific and technological project management regulations of water resources department, a clause can be added to affirm that the application of water conservancy scientific and technological achievements in universities can be regarded as one of the acceptance conditions of research achievements, and play an upgrading role in the assessment level of scientific and technological research results, making it an upgrade item of assessment level.

Second, it is necessary to strengthen the contact and interaction between local water conservancy institutions and higher vocational education through management and sharing of local water conservancy scientific and technological research and water conservancy teaching hardware and software resources, organize teachers to visit water conservancy institutions and hold academic conferences regularly through water conservancy associations, in order to make them pay close attention to the water conservancy trends and understand the development of water conservancy industry. It can also be done through the democratic party and other channels to play the social service function of water conservancy science and technology institutions, give regular lectures to students on campus, in order to popularize the development status and trend of water conservancy industry.

Third, higher education research and water resources should be shared through management. By managing the co-ecology of water conservancy curriculum research and

education research, water conservancy curriculum research can be closely combined with higher education research, especially with the research results of curriculum and teaching.

#### V. CONCLUSION

Higher vocational education is one of the most important part in higher education, and the quality of higher vocational personnel training is the core factor of regional economic development. Therefore, it is of strategic significance to study how to construct "golden course" in higher vocational colleges. It is also one of the core functions of the classified research of higher education to explore how to realize the talent cultivation through the case study of some important fundamental construction majors.

It is an effective way to carry out the construction of "golden course" in the context of the construction of water conservancy course. Specialized courses for the current water conservancy construction faced with low enthusiasm, unclear curriculum content, weak contact with industry and the construction achievements and insufficient research funding. Only by constructing a curriculum construction ecology, and a typical "golden" course, by gaining abundant funds and by promoting scientific management or "golden" paths can we overcome these five typical difficulties,

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