

Research on China's holistic teaching design: Theme evolution, realistic confusion and strategy optimization

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Abstract: The introduction of subject literacy, the promulgation of "new curriculum standards", and the implementation and promotion of new teaching materials drive the transformation of school education methods and directly affect the transformation of research on teaching design. Therefore, the research on holistic teaching design focusing on the transformation of classroom teaching methods and pointing to the reform of classroom teaching is of important theoretical value and practical significance. By combing the researches on holistic teaching design of different subjects and different perspectives in the basic education stage, it is found that the relevant theoretical analysis and the holistic teaching design model or strategy provide a certain sense of guidance or reference for teaching practice. However, with the deepening of the holistic teaching design research, the problems in its research have gradually emerged: collaborative research needs to be deepened; the research horizon can be further expanded; the standardization of experimental research needs to be strengthened. Therefore, in terms of holistic teaching design research, it is necessary to explore new collaborative research models and innovate research methods to optimize collaborative research models, so as to promote the effectiveness and in-depth research; it needs to be integrated into interdisciplinary and transdisciplinary perspectives, so as to enhance the innovation of research by deepening discipline research and strengthening interdisciplinary research; experimental research needs to pay attention to the selection of experimental objects, the scientificity of experimental design, and the control of experimental factors, and the standardized analysis of experimental data is required, so as to effectively optimize the holistic teaching design model or strategy and improve the effectiveness and reliability of experimental research.

Keywords: holistic teaching design; collaborative research; interdisciplinary; experimental research; strategy optimization

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INTRODUCTION

On the occasion of the 20th year of "new curriculum reform", China's basic education is facing a series of challenges: the further improvement of the implementation mechanism of "Morality Education", the proposal of subject literacy, the promulgation of the "new curriculum standards", the implementation and promotion of new textbooks, etc. These challenges faced by school education will inevitably bring about changes in school education concepts and methods. In regard to the traditional paradigm of teaching theory, teaching is a process of transferring knowledge, while modern teaching theory emphasizes teaching as a process of enlightening thinking and problem solving. Subject literacy is the theme of the era of educational development, and it also indicates that school education will shift from "knowledge transmission" to "knowledge construction" (Wenbin et al., 2018). Therefore, the holistic teaching design research focusing on the transformation of classroom teaching methods and pointing to the reform of classroom teaching is of important theoretical value and practical significance. This article will focus on the research of the holistic teaching design in the basic education stage, combine different disciplines, and try to sort out the theme evolution, problem exploration and reflection prospects of the holistic teaching design.

The Theme Evolution of the Holistic Teaching Design

Due to the directivity of the holistic teaching design research, this article mainly sorts out the literature on the holistic teaching design research of elementary, junior and senior high school in the past 20 years, and conducts thematic analysis based on this.

Research Object

Traditional teaching design lacks a grasp of the integrity of knowledge, cannot generate the connection between new and old knowledge, and lacks a clear systematic knowledge structure. At the same time, the design sometimes ignores the students' psychological process of learning, neglects the implementation and training of the ability to analyze and solve problems, and lacks the systematic penetration of disciplinary thinking. For this reason, the holistic teaching design research came into being. The development of the research is mainly based on the rich theoretical foundation and different research perspectives, the construction of design models or implementation strategies, and the use of different research methods to test the practical effects.

The research objects of this article include journals, master and doctoral dissertations and related books. Among them, CNKI is used as the search engine for journals and master and doctoral dissertations. "holistic teaching design" is searched as subject terms, keywords or title. Considering that there may be duplicated papers or literature with low correlation, by reading the title and abstract of the document, mainly select Chinese core or CSSCI journal papers (relevant documents with academic value and high influence), and exclude documents that are irrelevant or low-relevant to the topic of "holistic instructional design" (such as the ones only talk about teaching design, holism, or not within basic education stage, etc.). There are 55 accurately matched documents, including 30 journal papers, 25 masters and doctors papers. This article mainly analyzes these 55 documents in order to clarify the current research status and existing problems of the holistic teaching design, and to explore the research directions that need to be further in-depth accordingly.

Holistic teaching refers to a teaching method that uses the unified characteristics of the teaching entity (including the nature of knowledge and function) to standardize students' thinking mode and learning tasks, help students experience the generation process of knowledge, control learning progress, achieve learning goals, and form subject literacy. Based on the perspective of teaching theory, teaching design is a design activity oriented to teaching systems, that is, a design activity that solves teaching problems, improves teaching processes, and optimizes teaching effects through comprehensive analysis and optimization of teaching elements based on methodology and theory. The definition of holistic teaching design is not unique. The definition adopted in this study is that "the holistic design activity or process which takes structurally related knowledge learning as a 'system', centers on students' learning, takes method learning, knowledge application, and problem-solving as the goal, and combine the learning of knowledge with the same or similar structure" (Xiangdong & Xian-dong, 2019).

The Theoretical Basis of Holistic Teaching Design

With the deepening of research, the theoretical foundation of the holistic teaching design has become more and more abundant. From different subject perspectives, researchers will choose different theoretical foundations as the research base. Some studies use solid epistemology, cognitive psychology, and neuroscience as the theoretical basis to construct an holistic teaching design model for unit knowledge structure. From the background of the English subject, the holistic language teaching theory, constructivist cognitive theory, Gestalt psychology, etc. are used as the theoretical basis to conduct research on holistic teaching design, analyze and construct different teaching design models or implementation strategies, and provide a great reference value. The research on mathematics holistic teaching design is mainly based on system holism and 4C/ID (four elements for complex learning) model theory. There are also studies that regard cognitive load theory, cognitive flexibility theory, and subject structure theory as the theoretical basis for the holistic teaching design of geography or chemistry.

Based on different subject backgrounds, although the theoretical basis of the holistic teaching design is different, there are also common points. The principles of system theory, teaching theory, and learning theory all provide methods and basic support for the holistic teaching design. In addition, Du Herong's "Second Digestion Theory" can also be used as an effective supplement to the theoretical

basis of the holistic teaching design. The "second digestion" is to combine the requirements and conditions of teaching and the characteristics of students. From the perspective of teaching design, teachers can further creatively understand, process, and excavate the content that needs to be taught, so as to better prepare for the purpose of teaching (Herong, 2007). This is also the theoretical support for teachers' ability to integrate teaching content.

The Holistic Teaching Design of Different Subjects

The holistic teaching design research under the background of different disciplines is mainly based on the characteristics of each discipline to sort out the progress and innovation of related research. Among the 55 documents on the holistic teaching design, the distribution of their subject backgrounds is as follows: 15 for Foreign Language (English), 14 for Mathematics, 8 for Physics and Chemistry, 7 for without academic subjects, 6 for Biology and Geography, and 5 for Language (Chinese) (See Table 1 for details). In the holistic teaching design research, the subjects with higher academic value or influence are more concentrated in the subjects of English and Mathematics, while the number of research in other subjects is relatively small. Due to different subject characteristics, the focus of holistic teaching design research is also different. Based on the holistic analysis, the following will mainly analyze from the four aspects of Foreign Language (English), Mathematics, other subjects, and no subject background.

Table 1. Research on holistic teaching design under different subject backgrounds

	Language (Chinese)	Math	Foreign language (English)	Physics/ Chemistry	Biology/ Geography	No Subject Background	Total (pieces)
Master & Ph.D. thesis (pieces)	2	3	12	4	3	1	25
Journal papers (pieces)	3	11	3	4	3	6	30
Total (pieces)	5	14	15	8	6	7	55

Foreign Language (English)

For the English subject, researches on holistic teaching design are based on different topics. Some studies have analyzed the problems in the content integration part of the holistic teaching design, and through the analysis and explanation of teaching cases, the effective integration of the content is carried out in a targeted manner, so as to improve the professional literacy of teachers and help them form a correct view of teaching materials, as well as improve students' learning ability, etc. (Lingting & Youhong, 2019). There are researches that combine the view of learning activities and the internal connection of the unit's holistic teaching design, refine the meaning of the unit theme, effectively reconstruct the teaching text, set the unit goals as a whole, and design the learning activities in a gradient, and devote to studying how to promote the progressive English theme activities with the perspective of the unit's holistic teaching (Fang, 2020), or researching on the holistic teaching design model and teaching experiment of primary school English theme units (Xiuhong, 2020). Cultivating students' ability to use English to solve practical problems is the pragmatic orientation of English learning. There are researches on the construction of the holistic teaching mode of elementary school English based on the problem-solving orientation (Ling & Wenbin, 2020).

The holistic teaching design research under the background of English subjects is also aimed at different types of courses, such as the holistic teaching design of high school English writing class, the holistic teaching design of the unit based on the learning activity view, the progressive English theme activity design from the overall perspective of the unit, The context creation of the overall design of the unit, etc. These studies are based on the perspectives of different course types or different knowledge modules, and propose corresponding teaching design model improvement plans or strategy implementation suggestions. To a certain extent, they provide theoretical guidance and practical reference for teachers.

Mathematics

The holistic view of mathematics is based on the holistic principles of system theory, starting from the internal logical connection of mathematical knowledge, and aims to focus on the integrity of

mathematical knowledge, logical continuity and consistency of thinking methods, focus on learning strategies and cultivate student autonomy Learning ability. Combined with the current research status of the holistic view, the research has sorted out the theoretical basis of the holistic view of mathematics, and mentioned that the teaching content, goals, learning conditions and teaching strategies should be integrated as a whole, and transferred existing experience to new context according to the relevance of the content structure, so as to solve challenging problems. Some studies focus on unit analysis and knowledge generation process, apply the idea of mathematics holistic view to mathematics teaching design, and give the basic framework of teaching design (Cornoldi et al., 2015; Wenyan, 2018). According to the existing problems in teaching and learning and the requirements for student training in the national curriculum planning, some studies believe that "holistic teaching design can guide students to experience the complete research process of mathematical problems, promote students' deep learning, and accumulate transferable experience of mathematics learning and research" (Xiandong & Xian-dong, 2019).

The 2017 version of the new curriculum standard has clearly pointed out the three stages of the holistic design of the theme teaching: preliminary analysis and preparation, mid-term development and design, and later evaluation and modification (Xueping & Lin, 2018), which also highlights the importance of the overall concept of the curriculum. According to the lack of the whole idea of curriculum in teaching design(including textbook layout, teacher awareness, school construction and curriculum management, etc. (Xiaoxiang, 2015), the research suggests that the teaching objectives, content, procedures and methods in the holistic teaching design should be implemented in order to reconstruct the holistic concept of the curriculum, improving the effectiveness of the holistic teaching design.

There are many researches on the holistic teaching design of mathematics for different course types. Among them, some researches improve the richness and smoothness of relevant knowledge connections by combing the systematic knowledge of review courses, thereby improving the accuracy and depth of students' understanding of knowledge, and helping them to form a good mathematical cognitive structure and acquire the ability to comprehensively use knowledge to solve problems (Baiqing, 2013). The holistic teaching design research of the unit of review class emphasizes the gradual and spiral development of review, which is conducive to improving the quality and efficiency of the classroom. Research can go deep into the subject to construct different design models or strategic paths, and provide theoretical support and reference for research ideas for the continued advancement of the holistic teaching design research in the context of mathematics.

Other Subjects

The holistic writing of the "systematic" and "two-line elements" unit as the basic structure provides the possibility for the implementation of the "integrated teaching of the unit" of Chinese (Zining, 2018). When thinking about the design of Chinese homework in combination with the knowledge and skills of the Chinese subject and educational practice, the in-class and extra-curricular educational resources are integrated and reorganized, paying attention to the integration of in-class knowledge and social situations (Fangyi, 2018). Of course, due to the complexity of the subject and other reasons, the research on the integration of knowledge in Chinese has yet to be further deepened.

There are studies exploring the implementation of emotional goals in the teaching design of chemistry subjects (Rudan, 2012), or studying the logical clues, scientific thinking methods and thinking processes of the knowledge content of chemistry textbooks. These studies are guided by the advanced learning theory, and on the basis of constructing the knowledge level and the level of understanding, they pay attention to the advanced learning of scientific thinking, construct the holistic scientific thinking method, and propose teaching strategies that can develop students' thinking in order to better cultivate students' scientific thinking (Chuxia, 2019). The holistic teaching of chemistry unit is an effective strategy to achieve diversified teaching objectives, diversified teaching methods, and integrated teaching, which can promote the development of students' understanding and thinking, thereby enhancing students' scientific literacy.

With the implementation of the 2017 version of the new curriculum standard, the Biology Department put forward the basic concept of "content focusing on the big concept", and added "academic quality standards" and "academic requirements". Oriented to achieve academic requirements, the course content is analyzed, and a general model of the holistic teaching design of the biology concept topic is proposed on the basis of argumentation (Chuxia, 2019). Similarly, the "core literacy of the

subject" proposed by the subject of geography is also a comprehensive manifestation of knowledge, ability and attitude. Because the content of geography teaching is contextual, holistic and systematic, researchers based on complex learning theories put forward strategies for the implementation of the holistic teaching design of geography, aiming to provide theoretical guidance on methods or methods for students' learning (Xing, 2019).

With the deepening of the research on the holistic teaching design of different disciplines, it is worthwhile to further think about the intersection and fusion of the research content. The combing of related theoretical foundations and the consistency of the research content are also aspects that can continue to be paid attention.

No Subject Background

In addition, there are researches on holistic teaching design based on a non-disciplinary background. some researches are based on the "content meaning, status meaning and ability meaning of knowledge" for the overall grasp, relying on the logic of subject knowledge, interdisciplinary knowledge, knowledge of related fields and various empirical knowledge, constructing the holistic teaching of the unit Design Patterns. Some studies explore the holistic view of instructional design based on holism (Wenbin et al., 2018). The design model contains the basic assumptions, design concepts and design methods of the holistic instructional design (Rui & Lili, 2009), and focuses on the background of the unit, proposing that the holistic teaching design with a unit as the unit would become the demand for education in the new era (Lei & Guiqing, 2019), and its process design requires not only the goal in place, the holistic management, but also the orderly operation and step-by-step implementation to reflect integration and order.

It can be seen that although the holistic teaching design research under different subject backgrounds is relatively rich. However, there is a tendency of separation between theoretical research and practical research on holistic teaching design. Therefore, related research has not been well adapted to the actual needs of education and teaching (Wenbin et al., 2018), and it is necessary to strengthen the combination and even integration of theoretical research and practical exploration.

Holistic Teaching Design Mode and Implementation Strategy

The research ideas of the holistic teaching design roughly include: literature review (defining of core concepts, combing the theoretical basis, etc.), surveys on the status quo of holistic teaching design, and holistic teaching design integrating current issues. Innovative research is generally given a clear holistic teaching design model or strategy, implementation path, etc.

Holistic Teaching Instructional Design Model

The holistic teaching design has the characteristics of non-linearity, flexibility, and evaluation diversity. Based on this, Li Yongting theoretically constructs the holistic teaching design model of the unit knowledge structure, and puts forward "the definition of the unit knowledge structure, the construction of the psychological process of learning, the grasp of teaching objectives and important and difficult points, the establishment of learning evaluation and organization of learning activities as five links." (Wenbin et al., 2018). The research emphasizes that the construction and operation of the five links of the model framework are interrelated. Based on the relevance of knowledge, Zhu Xiandong follows the structural relationship between knowledge for holistic design: the holistic design of vertical knowledge structure connection, the holistic design of horizontal knowledge structure connection, and the holistic design of "vertical and horizontal integration" knowledge structure connection (Xiandong & Xian-dong, 2019). According to the existing problem-solving model, some researchers divided the holistic teaching process of the "problem-oriented" unit into five steps: discovering problem, clarifying the problem context; expressing the problem accurately, and concretizing the content or information of the problem; multiple perspectives Analyze the cause of the problem and look for potential causal relationships; forming possible problem-solving strategies to achieve goals; assessing the effect of problem-solving, and evaluating the process and results of problem-solving comprehensively (Ling & Wenbin, 2020). Moreover, these five steps are progressive, circular, and integral, running through the learning process, and gradually structure unit knowledge with the deepening of learning.

Holistic Teaching Design Strategy

Based on the basic idea of the combination of "holistic" and "order", some researchers use the holistic context of the unit as a carrier to study the implementation strategies of context creation and give strategic suggestions (Wenqing, 2017). The holistic context can be used to guide students to improve their comprehensive pragmatic competence, or conduct experimental research according to the implementation principles of content integration in the context of the holistic design of the unit, and sort out the implementation strategies for content integration in the context of the holistic teaching of the English unit to help teachers (Lingting & Youhong, 2019). Based on the complex learning theory, in-depth exploration of the internal connections of knowledge requires teachers to in-depth exploration of the curriculum standards and teaching materials, combined with student cognition and the internal logic of the subject to coordinate and optimize the teaching content system (Xing, 2019).

Combining different perspectives, the research has obtained corresponding holistic teaching design models or strategies and implementation paths. Some models or strategies are more innovative. From the design model to the modification and perfection, it can effectively integrate teaching practice and provide guidance for teaching. But there are also some researches that are not in-depth enough, and the connection between theoretical construction and practical attempts is not strong, and the guiding significance for practice is not strong, and the expected level and the actual level are relatively separated.

METHODS

By combing the existing related literature, it is found that the research methods on the holistic teaching design mainly focus on "document analysis+logical speculation+case analysis", or "case analysis+logical speculation+experimental research/action research"(However, most of the journal literature does not specify its research methods). From this analysis, the current research methods for holistic teaching design mainly focus on literature analysis, logical speculation, case analysis, and simple experimental research or action research.

For example, in some researches, it is more common to use questionnaires or interviews to investigate the current situation of teachers and students, and then combine the current situation to carry out targeted holistic teaching design. Two of these dissertations used action research. The researcher conducted a pre-test survey on the status quo of middle school students' English writing (a 12-week action research on 3 classes in a certain grade). After the experiment, the pre-test and post-test were compared, perform statistical analysis, and then adjust the plan to continue the experiment. There are also researchers focusing on the design of progressive theme activities, conducting half-year experimental research, and devoting themselves to studying how to promote the progressive theme activities of primary school English from the perspective of unit holistic teaching. Research was carried out in three stages: analysis, implementation and reflection, aiming to design a progressive theme activity that points to the learning goals and suits the learning content (Lingting & Youhong, 2019).

When researchers use action research or experimental research, there are more or less irregularities. For example, the experimental period is short and the selection of experimental subjects is not representative, which leads to certain limitations in the evaluation of experimental subjects. For this reason, the setting of the experimental control group, the validity of the data, and the accuracy of data analysis all need to be further improved.

RESULT AND DISCUSSION

The Realistic Confusion of the Holistic Teaching Design

The holistic teaching design research originates from the current difficulties faced by teaching. It puts the explicit requirements of developing students' subject literacy into consideration under the teaching design, and seeks the consistency between the subject literacy dimension and the teaching dimension. In recent years, there have been more in-depth discussions on how to improve classroom teaching efficiency in terms of teaching concepts, teaching methods, and teaching models. The holistic teaching design research has also achieved some theoretical and practical results, which has attracted the attention of frontline teachers to a certain extent and has produced a reference for teaching practice.

However, with the deepening of the research, the problems in the research have gradually emerged. Research on China's holistic teaching design framework can be seen in Figure 1.

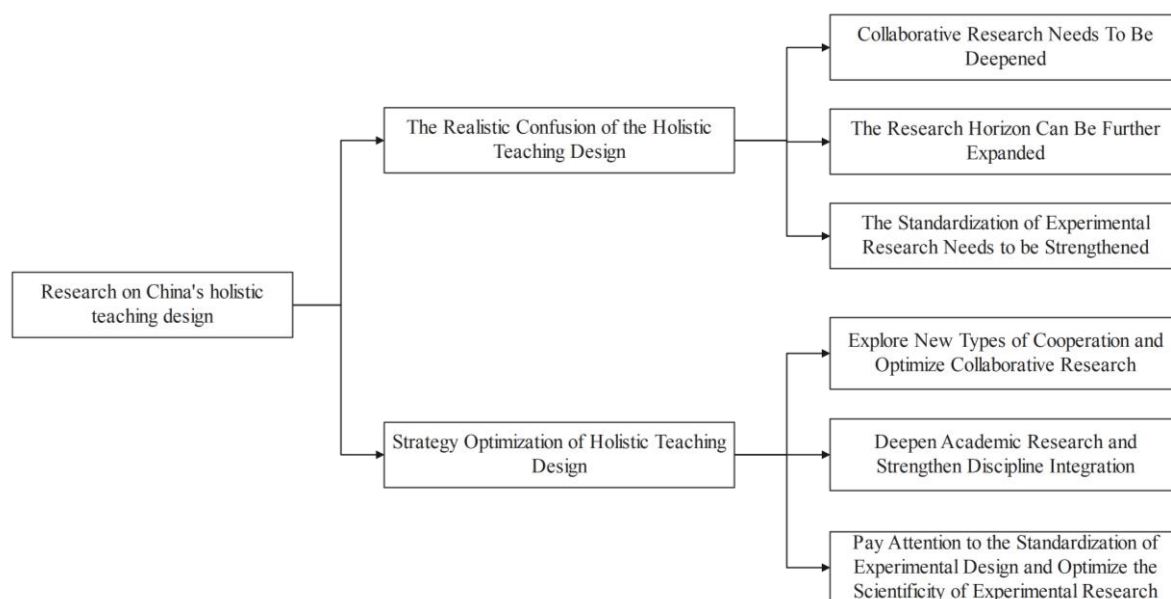


Figure 1. Research on China's holistic teaching design

Collaborative Research Needs To Be Deepened

The cyclical generation process of the analysis, construction, debugging and adoption of the holistic teaching design research has high requirements on the holistic teaching design ability of teachers or researchers. The holistic teaching design ability is specifically manifested as the ability to comb the theory, the ability to integrate related resources, and the ability to construct a design model based on a certain perspective. Insufficient capabilities in these areas will lead to insufficient research innovation and poor operability, making the research of teaching design stay at the level of what it should be, and resulting in a phenomenon of relative separation between theory and practice.

The holistic teaching design research is a systematic project, and the researchers are mostly university professors, teaching researchers or teachers, and its corresponding organizations or institutions are universities or research institutions, government or administrative departments, and primary and secondary schools. However, these researchers and their corresponding organizations or institutions often have their own strengths and perform their duties. They have their weaknesses in the holistic teaching design capabilities but lack cooperation and complementarity. The lack of collaborative research between organizations, the lack of joint efforts of researchers, and the low enthusiasm of researchers will inevitably lead to lack of systematicness, in-depth and innovative nature, leading to disconnection between theoretical and practical research.

The Research Horizon Can Be Further Expanded

Based on the holistic teaching design research under the subject background, most of the researches are carried out on the subject and corresponding theoretical basis. The research perspective stays more in the integrity of the teaching knowledge within the subject, such as the holistic teaching design of the unit, the holistic perspective, the core literacy perspective, the holistic design framework, etc. These perspectives will limit the field of vision or research direction, and often just change a subject background, designing patterns or strategies are not innovative enough. Non-disciplinary holistic teaching design research requires integrated thinking about holistic teaching design, and studying the integrity of interdisciplinary. This type of research has its value and necessity, but it puts forward higher requirements for researchers' theoretical literacy and academic ability. Therefore, the number of research on non-discipline is relatively small in the research, which is also a research direction that can continue to be paid attention to. The limitations of the research horizon may affect

the value of the holistic teaching design research, solidify the innovation of research ideas and design models, and then affect the directionality of research design.

The Standardization of Experimental Research Needs to be Strengthened

The research thinking of the holistic teaching design is generally presented as: literature review, theoretical analysis, teaching design mode or strategy construction, experimental research / action research-reflection and adjustment. Simple experimental research or action research will be added to the research, but the experimental period setting is not reasonable, the choice of experimental subjects lacks representativeness, and the evaluation of the results has limitations, etc., which will affect the validity of the data, and then affect the data analysis. As a result, the validity of experimental research is reduced, which hinders the improvement of teaching design models or strategies. From a research perspective, it is necessary to strengthen the rigor of experimental research to ensure the effectiveness of the construction or strategy of the teaching design model and the implementation path, and then improve the effectiveness and reliability of the holistic teaching design research.

Strategy Optimization of Holistic Teaching Design

The introduction of subject literacy not only drives the transformation of school education methods, but also directly affects the transformation of school teaching methods. The purpose of holistic teaching design research is to adapt to the changes in students' learning styles. Therefore, in view of the above-mentioned problems and their reasons, the holistic teaching design research can continue to conduct in-depth research on the following aspects.

Explore New Types of Cooperation and Optimize Collaborative Research

The holistic teaching design is a systematic engineering. The designer and implementer of this "project" are sometimes not the same person, so optimizing the collaborative research ability of educational researchers is an important research direction of the holistic teaching design research.

The smooth implementation of the theoretical research of the holistic teaching design, the construction of design models or strategies, experimental research, reflection and revision, and practice adoption and application all require researchers or teachers, faculty, researchers, and related university professors to form a research community and participate in collaboration. Based on the research paradigm, the community needs to formulate a reasonable research path, test the suitability or completeness of the holistic teaching design model or strategy, optimize the operability or flexibility of the model, enhance the stability and continuity of the model, etc., and collaboration of the community is in urgent need. Therefore, innovating research work methods, exploring new research cooperation models, and optimizing collaborative research models are the inherent requirements for strengthening and improving the effectiveness and reliability of the holistic teaching design research.

Deepen Academic Research and Strengthen Discipline Integration

Based on the "solid discipline foundation and cultivation of new interdisciplinary growth points", the relevant notice issued by the Academic Degrees Committee of the State Council and the Ministry of Education decided to set up the "interdisciplinary" category. Interdisciplinary integration is a major feature of the current development of science and technology, and an effective way to cultivate innovative talents. Therefore, interdisciplinary (integration), transdisciplinary (principle), etc. can all be included in the holistic teaching design research horizon, continuing to carry out disciplinary research, strengthening disciplinary research, and exploring transdisciplinary research.

Of course, in the holistic teaching design research, the researcher can also expand the research perspective from the level of research thinking, which can highlight the relevance of knowledge between disciplines or related fields, such as focusing on the integration of the teaching content of the fusion course and the completeness of the context design of the fusion course; Researchers can also consider the integration of interdisciplinary culture; the holistic teaching design not only needs to pay attention to the integrity of knowledge, but also the systematic, holistic and theoretical aspects of subject thinking, and need to think about how to integrate it into the holistic teaching design step by step.

Pay Attention to the Standardization of Experimental Design and Optimize the Scientificity of Experimental Research

With the deepening of the holistic teaching design research, the standardization of its research methods needs to be paid attention to, especially the standardization of experimental research. The essence of experimental research is manipulation, that is, researchers and collaborators carry out experimental interventions in specific situations (Gall et al., 1996, 2003). When experimenting with the holistic teaching design model or strategy, researchers need to understand the standardization of the experimental process in order to obtain more objective experimental data and analyze and control them.

First, Pay attention to the effective selection of experimental subjects. First, we need to consider the random assignment of experimental objects (schools or students, assignment to experimental group and control group). At the same time, when selecting the experimental group and the control group, it is necessary to maintain the similarity of the two groups of experimental subjects, that is, during the pre-test, the initial state of the two groups of students should be as close as possible to the same level.

Second, Pay attention to the effective control of irrelevant factors in the experimental group and the control group. Researchers need to consider the irrelevant variable when designing the experiment, so as not to be misled by the irrelevant variable when judging the cause of the difference between the two sets of results, and thus affect the scientific nature of the experiment. In the experiment, the researcher must manipulate the situation by himself. If the two groups of unrelated factors are inconsistent in the experiment, the corresponding factors should be adjusted in time to ensure that the two groups of experimental subjects, except for the experimental factors, are as consistent as possible, so as not to affect discussion on the relationship between intervention variables and outcome variables.

Third, Pay attention to the standardization of data analysis. In the experimental research of the holistic teaching design, it is necessary to pay attention to the measurement of enough dependent variable data in each intervention situation and control situation in order to clearly see the changing trend of "behavior". When analyzing data, descriptive statistical calculations can be performed on the measurement results of the pre- and post-test, such as analysis of variance and multiple regression analysis to explore the statistical significance of the difference between the experimental group and the control group in the post-test (existing differences are controlled by covariance analysis or multiple regression analysis).

Fourth, Pay attention to the adjustment and optimization of the research plan. When discussing the results, it is necessary to make effective judgments in conjunction with data analysis, consider adjustable plans, and propose constructive amendments and implementation paths. Therefore, regarding the holistic teaching design model from analysis, construction, debugging to introduction of teaching, what are the standards for debugging and the rationale for correcting instructional design models or strategies? These are all issues that need further attention in experimental research on holistic instructional design.

CONCLUSION

The in-depth development of the holistic teaching design research is not only required by the development trend of school education and teaching, but also required by the school education and teaching practice to implement the national education development strategy of "Morality Education", and it is also the need for theoretical research and practical application of teaching design.

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