Research Review under the Framework of Inquiry Community Theory

Qian Wang, Ziyi Wang, Xintong Li

Zhejiang Normal University, Jinhua, 321004, China

Abstract: The framework of inquiry community theory provides a unique perspective, method and tool for online learning and blended learning research. Based on this, this paper first introduces the origin and connotation of inquiry community theory, then reviews the researches under the framework of inquiry community theory at home and abroad in recent years, and divides the researches under the framework into four categories, which are the researches focusing on the framework itself and the three components of the framework, aiming to provide reference for the researches under the framework. It is concluded that since the research under the framework of inquiry community was put forward at the beginning of the 21st century, more and more scholars have paid attention to this field, but there are still some problems such as insufficient research depth and insufficient local verification methods of domestic research.

1. Introduction

In recent years, with the rapid development of the Internet and the popularization of artificial intelligence education, online teaching has gradually entered the educational field of contemporary society. The document "Guidelines on Promoting the Healthy Development of Online Education" issued by the Ministry of Education in 2019 clearly points out that the sound development of online education should be promoted. Since then, the outbreak of COVID-19 has accelerated the normalization and standardization of online education. However, along with the rapid development of online education, some urgent problems of online education have surfaced, such as high dropout rate of online teaching students, low learning efficiency, students are not active in learning and so on[1]. Although the reasons for these problems cannot be generalized, some researchers, such as Yang Jie and Remesal, believe that inquiry community theory is an effective teaching theory in the field of online teaching and blended learning [2]. Therefore, although there are many reasons for such problems, this paper mainly analyzes and summarizes the existing studies from the perspective of presence, and reflects on the existing deficiencies under the framework of inquiry community theory, and puts forward the research prospects under this theoretical framework.

2. Explore the origin and connotation of the theoretical framework of community

From the mid-1990s, the introduction of Internet technology enabled the development of online

education. Researchers began to pay attention to online learning and apply social presence in the field of educational technology. Randy Garrison, a Canadian distance education scholar, and others created the Community of Inquiry Framework (CoI)[3]. Guided by social constructivism theory and based on Dewey's Community and Inquiry and its critical reflection theory, this framework extends the concept of inquiry community to online learning and blended learning. The components of this framework include social presence, cognitive presence and instructional presence. It constructs a theoretical model and structural framework that focuses on how students effectively construct knowledge in distance learning. The three elements of social existence, cognitive existence and instructional existence cross each other to construct a valuable learning experience process (Figure 1)[4]. Among them, cognitive existence refers to the degree to which learners construct meaning through constant critical reflection and dialogue in the inquiry learning community, including four stages of triggering events, inquiry, integration and solution. Social presence refers to the ability of learners to project individuals into inquiry learning communities through media, so as to present themselves as "real people", including three sub-dimensions of emotional expression, open communication and group cohesion. Instructional presence refers to the design, promotion and guidance of learners' cognitive and social processes in order to achieve meaningful teaching effects. Instructional presence includes three sub-dimensions: instructional design and management, dialogue facilitation and direct teaching. Garrison et al. not only established the theoretical model but also developed a coding scheme to match the model[5].
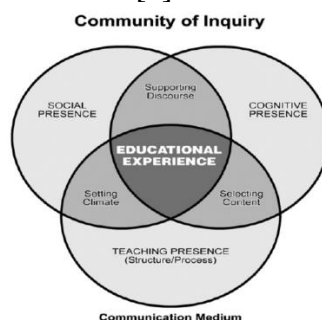

Figure 1: Community of inquiry framework

The emergence of an exploratory community theoretical framework that emphasizes the concept of collaborative learning provides a unique perspective, method, and tool for the research of online learning and blended learning. Once proposed, this study has aroused great interest among online learning researchers and has been cited 7000 times (reported by Google Academic Search in July 2021). Researchers have conducted extensive research and validation around this theoretical framework on how to utilize online and blended learning support to promote the achievement of higher-order thinking in learners[6].

3. Exploring research hotspots within the framework of community theory

Since the proposal of the exploratory community framework, scholars at home and abroad have conducted various studies based on this theoretical framework, including empirical research to explore its effectiveness, theoretical exploration, and scholars proposing innovations to the framework. The following will summarize the research in this field from five aspects.

3.1 Focusing on exploring community models

Focus on the model itself and its structural relationships, especially the interaction between the three entities in the framework, as well as the impact of other factors on the model, and further research on model improvement. Early research mainly focused on the components of the model, its

reliability, and validity. It was only in the past two years that research shifted to the relationship between various factors. For example, Arbaugh, Cleveland Innes, and others used multi agency samples in 2008 to test and explore the measurement effectiveness of the community framework[7]. We will not go into detail about early validation studies here. In recent years, research has been carried out on the relationship between various variables in the turn model. For example, Lan Guoshuai, Zhong Qiuju and others carried out mixed teaching practice based on online learning space in 2018, and used questionnaires, structural equation modeling and other methods to explore the structural relationship between learning presence and inquiry community model in blended learning[8]. In 2021, Sun Jia, Tong Mingwen, and others explored the black box mechanism of presence in online teaching. In terms of model improvement, some scholars have proposed adding the key element of learning presence, and Wu Xiangen et al. have re integrated a more comprehensive exploration community framework based on previous research[9]. In recent years, relevant research has helped predict learning performance in online teaching and improved the interpretability of the exploratory community framework. However, existing research still has certain limitations, such as incomplete samples and insufficient localization of scales used.

3.2 Pay attention to cognitive existence

Early research on cognitive existence mainly focused on the four stages of existence, whether the cognitive activities of online learning can be smoothly carried out and their influencing factors. For example, Sadaf, Olesova et al. designed discussion questions for online courses based on the four stages of cognitive existence, and found that compared to conventional methods, they can better improve students' cognitive existence level[10]; Jibrel and Pramela conducted a survey on cognitive existence among students of an English skill course in Jordan University. They found that the environment of blended learning can create an active cognitive existence. Among them, research on cognitive existence is mainly focused on by foreign researchers, and there are relatively many literature published in foreign journals. However, domestic scholars only focus on this aspect, which is almost zero. Only in 2019 did Jiang Yanshuang, Cui Can, and others analyze the directional relationship between metacognition, learning existence, and social existence[11]. Throughout domestic and international research, it can be found that many studies only remain superficial and have insufficient depth.

3.3 Pay attention to social existence

Social existence, as an intermediate variable between teaching existence and cognitive existence in the exploration community model, cannot be underestimated in long-distance teaching. Hu Ke, Wang Xiaoxiao, and others have pointed out that effective interaction can strengthen the three senses of existence in the exploration community, and social existence is the direct indicator of interaction, thereby promoting effective cognition and meaning construction. Guo Chen, Peter, and others explored the impact of text based and audiovisual discussions on graduate students' sense of social presence in a certain course, as well as their impact on students' knowledge construction. The results showed that a high level of presence can promote meaningful knowledge construction among students. Most of the research in this section is empirical research, and it is an undeniable fact that social existence can affect learning motivation. However, further research is needed to determine whether it can truly improve academic performance.

3.4 Pay attention to teaching existence

Establishing a critical inquiry learning community requires appropriate cognitive and social presence, but ultimately depends on the teacher's teaching presence. The research in this area mainly focuses on the design of teaching by teachers and the exploration of factors that affect the existence

of teaching. For example, Wang Qiong introduced the concept of teaching existence and revealed its influencing factors in 2020, and then proposed its implementation path, providing a reference for establishing a moderate teaching existence; Wang Guangxin, Lu Hong, and others used correlation analysis and empirical analysis to find a significant correlation between the level of teaching presence and learning performance, and the five factors of teaching presence have significant differences in predicting learning performance[12]. Malin, Hrastinski, and others have explored that online tutoring by teachers can to some extent enhance students' interaction level, thereby also enhancing the sense of teaching presence. At the same time, the coregulation between self and teachers and students promotes the development of students' metacognition[13]. In terms of subcategories such as promoting interaction and learning performance in teaching, research has mostly focused on the behavior of teachers. The author believes that teaching should not only exist in teachers, but should pay more attention to the participants of activities.

4. Conclusion and Outlook

In the past twenty years of exploring the development of community theory, there has been sufficient research to prove that this theoretical framework has a significant positive impact on promoting students' online learning effectiveness, meaningful knowledge construction, and other aspects. However, there is a slight lack of research and control on some details in this framework. Foreign research has paid more attention to this aspect, but domestic research is still in its early stages and lacks a lot of empirical research and the research is not localized enough. The organization of this article helps to clarify the research under this framework and provides reference for subsequent research design under this framework.

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