

Research on the Application of Hybrid Teaching Based on a Community of Inquiry Theoretical Model in Economics Course

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Abstract. Hybrid teaching will become the new normal of education in the future. The community of inquiry theoretical model is the most mature and widely used hybrid teaching evaluation framework at present. The community of inquiry theoretical model is also the theoretical framework of hybrid teaching design and implementation. The community of inquiry theoretical model is considered to be an effective theory to explain mixed teaching. Based on the community of inquiry theoretical model, this paper designs a hybrid teaching model for the course of Economics. This paper verifies the effect of hybrid teaching model based on the community of inquiry theoretical model.

Keywords: hybrid teaching; community of inquiry theoretical model; economics

1. Introduction

After more than 20 years of development, hybrid teaching has developed into an important teaching method. Many scholars, research institutions and teachers believe that hybrid teaching will become the new normal of education in the future. However, the existing hybrid teaching of economics courses in Colleges and universities mainly has the following problems: first, from the perspective of the implementation of hybrid teaching, the existing hybrid teaching in Colleges and universities mainly has the superficial combination and substantive separation of Internet and teaching, and the online education process is one-way static, hybrid teaching is regarded as the "substitution" or "assistance" of classroom face-to-face teaching; Second, from the perspective of teachers, the existing hybrid teaching in Colleges and universities mainly has two problems: the dislocation of teachers' positioning and responsibilities, and the insufficient preparation of teachers' teaching ability; Third, from the perspective of students, the existing hybrid teaching in Colleges and universities mainly has two problems: some students have exclusion psychology towards hybrid teaching and students' poor autonomous learning ability. The hybrid

Yajuan Sun

teaching based on the community of inquiry theoretical model can create a high participation and personalized learning experience for students, so that students can not only obtain the basic theoretical knowledge of the curriculum, but also realize the self construction and generation of personalized and creative knowledge. Hybrid Teaching Based on the community of inquiry theoretical model can not only improve students' learning effect but also improve students' learning experience.

2. Theoretical backgrounds

2.1. The meaning of hybrid teaching

Hybrid teaching will be developing rapidly under the background of "Internet plus education", and the attention of the education sector to hybrid teaching is rising again. However, the hybrid teaching in the Internet plus era has changed greatly compared with the blended teaching in the early 2000. In short, hybrid teaching is a mixture of face-to-face teaching and online teaching. According to Feng Xiaoying's [1] research, the evolution of the blended teaching concept can be divided into three stages: technology application, technology integration and Internet plus.

The technology application stage appeared from the end of the 1990s to 2006. At this time, the most representative definition is the definition of hybrid teaching by the Sloan alliance of the United States [2-3]: "hybrid teaching is the combination of face-to-face teaching and online teaching, mixing their independent face-to-face teaching and online teaching" . The stage of technology integration appeared from 2006 to 2013. At this time, the most representative definition of hybrid teaching is the definition of bucolic et al. [4]: hybrid teaching is a new learning method, which enables the combination of face-to-face interaction and online interaction between students and teachers, students and students, and students and curriculum resources. In the stage of technology integration, it is generally believed that there is no obvious difference between the teaching effect of hybrid teaching and classroom teaching, and hybrid teaching can not achieve a better teaching effect than classroom teaching. Like the technology application stage, in the technology integration stage, hybrid teaching is still regarded as the "substitution" or "assistance" of classroom face-to-face teaching.

The Internet plus stage is from 2013 to date. From the perspective of students, hybrid teaching at this stage pays more attention to the acquisition of students' personalized knowledge and the generation of creative knowledge. Firstly, the application of mobile technology has been introduced into the concept of hybrid teaching. Secondly, hybrid teaching emphasizes student-centered, creating personalized and highly participatory learning experience for students, and paying attention to the support of Blended Teaching for students' learning. Hybrid teaching can not only take the advantages of face-to-face teaching and online teaching, but also avoid the disadvantages of both. It can effectively

Research on the Application of Hybrid Teaching Based on a Community of Inquiry Theoretical Model in Economics Course

improve the effect of classroom teaching and promote the learning effect of students.

2.2. Community of inquiry theoretical model

The community of inquiry theoretical model was jointly created by Canadian scholars Garrison, Terry Anderson and Walter Archer. The community of inquiry theoretical model applies network technology to the field of education. Guided by constructivism and based on critical reflection theory, it provides a unique perspective, methods and tools for the study of hybrid teaching. The community of inquiry theoretical model is the most mature and widely used mixed teaching evaluation framework at present, and it is also the theoretical framework for the design and implementation of mixed teaching. Moreover, the effectiveness of the model has been confirmed by a large number of empirical studies and is considered to be an effective theory to explain mixed teaching [1,5,6]. The community of inquiry theoretical model is an effective teaching theory composed of three interdependent elements: social presence, cognitive presence and teaching presence. These three kinds of existence affect and promote each other. In the theoretical framework of an inquiry community, supporting dialogue is the responsibility of opening and maintaining mutual cooperation and communication between peers, establishing a learning atmosphere and inquiry learning environment, and managing learning is the responsibility of monitoring and managing students' autonomous learning and collaborative learning. In the theoretical framework of exploring the community, the overlapping parts of "three kinds of existence" can produce a meaningful educational experience.

3. Design of hybrid teaching model based on the community of inquiry theoretical model

The community of inquiry theoretical model can effectively link classroom teaching and online teaching in the hybrid teaching of "Internet plus" era. First of all, it can organically integrate the "teaching" of teachers and the "learning" of students; Secondly, it can organically integrate communication, collaborative inquiry, emotional expression and group cohesion in the process of interaction; Finally, it can organically integrate the individual elements in the cognitive process with critical thinking and high-order thinking. Combined with the research of Yang can [7], the design of hybrid teaching mode of economics of community model is shown in Figure 1. The model organically integrates online and offline teaching, and can realize the efficient integration between classroom teaching and online teaching, communication and cooperation and group cohesion, self-regulation and critical thinking, and the cultivation of advanced thinking ability.

When establishing teaching presence, based on the theory of constructivism and the hierarchical relationship of cognition from shallow to deep, and based on the careful design

Yajuan Sun

of the curriculum content, the curriculum content can be divided into five aspects: knowledge point learning, strengthening of knowledge points, systematization of knowledge structure, knowledge application and expansion, knowledge test and construction. Each aspect corresponds to the key points and methods of online and offline teaching, as shown in Figure 1.

Based on the community of inquiry theoretical model, the hybrid teaching mode of private universities in the "Internet plus" era takes the realization of cognitive existence as the core, and creates the sense of teaching as the main focus, so as to form social existence grasps. The overlapping parts of "three kinds of existence" can produce meaningful learning and in-depth learning. The sense of teaching existence, social existence and cognitive existence interact and promote each other in the online and offline environment. The sense of teaching presence promotes students' online and offline discussions by coordinating the teaching design and organization of online and offline teaching environments and directly guides students' online and offline learning and cognitive activities. The problems arising from the interactive activities in the sense of social existence and the cognitive practice process in the sense of cognitive existence, in turn, promote the improvement of teaching design, organization and guidance methods. Through online and offline open discussion and communication and group cooperation, social existence can enable students to fully express their views and show their personalities and characteristics. Trusted social activities can also be established among peers, which can promote the deepening of the cognitive exploration process and improve students' ability to deal with interpersonal relationships. The sense of cognitive existence takes the learning community formed by the sense of social existence as a method and means to continuously stimulate, promote and deepen every link of triggering, exploration, integration and solution in the process of cognitive practice with critical thinking. The combination of online and offline finally forms a rich and profound cognition. Based on the design of the Hybrid Teaching Model of inquiry community model, the mixing of online and offline environments gives play to the decisive influence of the sense of teaching existence on the sense of social existence, especially on the sense of cognitive existence. Online and offline are complementary and progressive. The three elements need to play an online and offline role with the help of online teaching platform and teaching skills.

4. Methodology

4.1. Research method

4.1.1. Implementation object selection

From September to December 2021, the research group randomly selected 2 classes from 13 classes of 2021 undergraduate courses in e-commerce, accounting and financial management. One class was set as the control group and one class as the experimental

**Research on the Application of Hybrid Teaching Based on a Community of Inquiry
Theoretical Model in Economics Course**

group by flipping a coin. Carried out a round of mixed teaching practice of economics course based on the theoretical model of exploratory community. The classes in the control group still use the traditional teaching method, and the classes in the experimental group use the hybrid teaching mode based on the community of inquiry theoretical model.

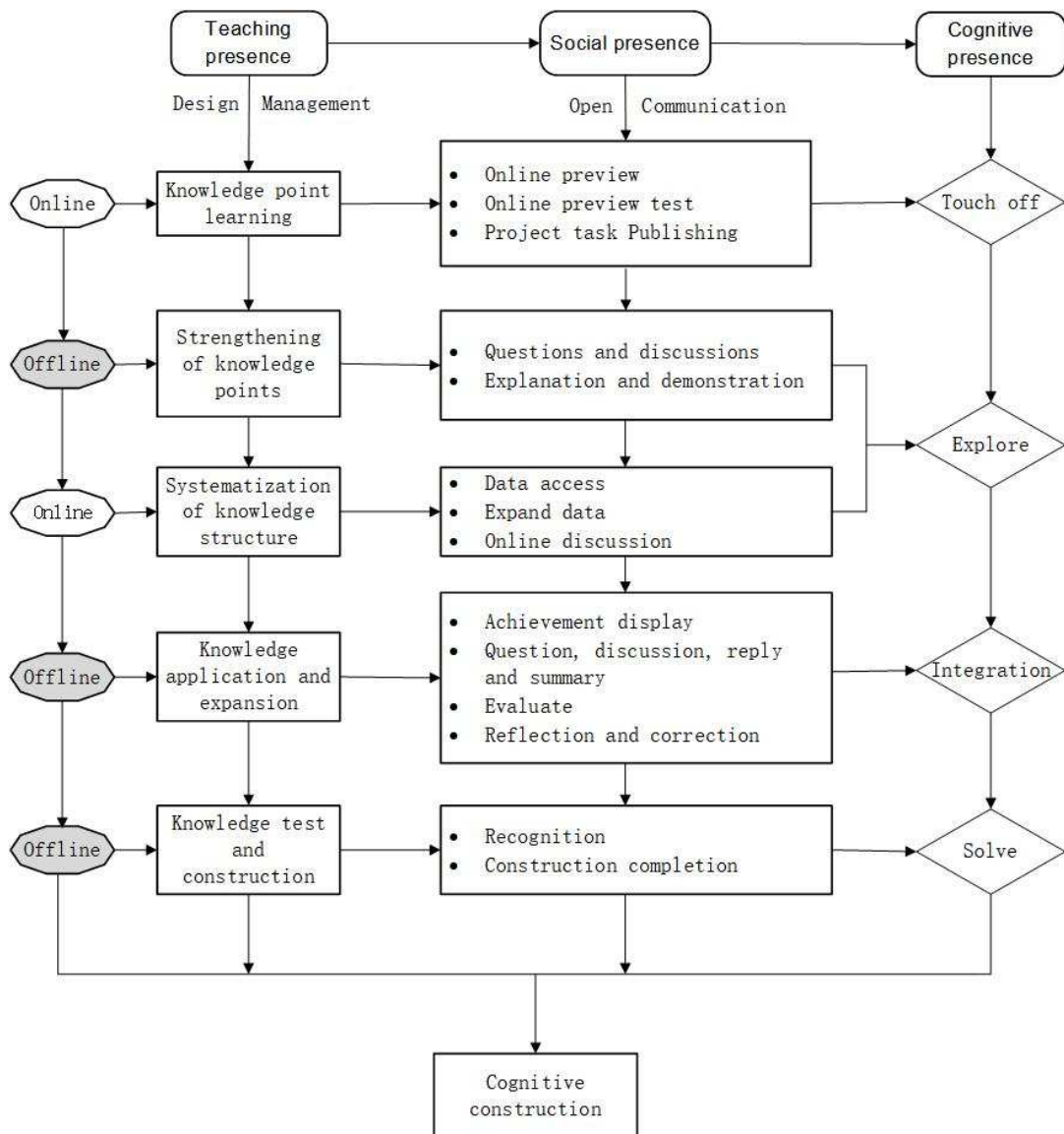


Figure 1: Design of hybrid teaching model based on the community of inquiry theoretical model

Yajuan Sun

4.1.2. Intervention methods of the experimental group

With the help of the online teaching resources of the key courses of economics constructed in the early stage, the experimental group carried out a hybrid teaching mode of online and offline combination based on the theoretical model of exploratory community. Taking the chapter of macroeconomic policy of economics course as an example, the mixed teaching mode based on exploring the community theoretical model is as follows: firstly, the course group divides the content of this chapter of macroeconomic policy into five aspects: knowledge point learning, knowledge point strengthening, knowledge structure systematization, knowledge application and expansion, knowledge testing and construction. Secondly, knowledge point learning requires students to complete the preview of chapter contents and preview test questions through the school cloud platform and with the help of micro class videos of key and difficult knowledge such as macroeconomic policy objectives, fiscal policy and monetary policy uploaded by teachers before class, so as to test their preview effect. At the same time, understand the project tasks of this chapter: in 2020, the epidemic will ravage the world and bring a heavy blow to the global economy. Among the world's major economies, only China's economy has achieved positive growth. If you are a national economic policy maker, what macroeconomic policies will you adopt to deal with the impact of the epidemic on the economy? Third, strengthen the knowledge points in the classroom. According to the learning situation of students' online knowledge points, teachers explain and demonstrate the key and difficult contents of the course, guide students to discuss the project tasks proposed in the pre class preview stage, understand students' ideas, and give timely comments on students' ideas. Fourth, the systematization of knowledge structure requires students to complete online after class. Students carefully read various expansion materials about project tasks uploaded by teachers on the school cloud platform, including 2020 government work report, 2020 China's monetary policy, 2020 China's fiscal policy, six stabilities and six guarantees, tax reduction and fee reduction policies and other materials related to project tasks, Integrate their own preliminary plans for adjusting economic and macroeconomic policies, and upload their own plans to the discussion area. Fifth, in the next class, complete the application and expansion of knowledge points, test and construction of knowledge points. Teachers can use the form of flipped classroom teaching and inquiry teaching to require students to show their macroeconomic policy plan for regulating the economy in the classroom, and other students and teachers can ask questions, question and evaluate the plan, Students can also answer questions and questions. The teacher must comment and summarize the student's achievements. Through exchanges and communication with peers and teachers, students constantly reflect and improve their own policies and plans, so as to promote their own macroeconomic policies and plans to more effectively reduce the impact of the epidemic on the economy.

Research on the Application of Hybrid Teaching Based on a Community of Inquiry Theoretical Model in Economics Course

4.1.3. Intervention methods of control group

The control group did not join the inquiry learning community, and mainly adopted the teaching mode of classroom teaching. Before class, the teacher sends the course network resources (including micro class video, course PPT, cases, expansion resources, homework, etc.) to the students through the school cloud platform, and requires the students to preview before class; In the class, the teacher first tests the students' mastery of the key contents of the previous class and the preview of this class by asking questions, and then teaches the key and difficult knowledge of this class through cases and discussions according to the teaching objectives and content requirements; After class, teachers need to urge students to complete their homework and answer students' difficult questions.

4.2. Evaluation tools

4.2.1. Evaluation of theoretical examination results

After the course, the two groups of students will be assessed by the instructor in the form of unified proposition, unified invigilation and unified marking. The full score of the test paper is 100 and the test time is 120 minutes. The students in the control group and the experimental group take the final theory examination. The average scores of the two groups of students in the final examination of economics course were compared.

4.2.2. Evaluation of critical thinking ability

The evaluation of critical thinking ability adopts the Chinese version of California critical thinking questionnaire translated and revised by Peng MEICI of Hong Kong Polytechnic University [16]. The Chinese version of California critical thinking questionnaire was used to evaluate the critical thinking ability of the control group and the experimental group after the course. The questionnaire includes seven dimensions: truth-seeking, open-minded, analytical ability, systematic ability, self-confidence, thirst for knowledge and cognitive maturity. Each dimension contains 10 items, a total of 70 items. Using Likert 6-level scoring method, each item is divided into 6 levels from "very disagree" to "very agree", with 1-6 points, 30 forward items and 40 reverse items respectively. The total score is 70-420, ≤ 210 indicates negative critical thinking, 211-279 indicates medium critical thinking, 280-349 indicates positive critical thinking, and ≥ 350 indicates strong critical thinking ability. The content validity of the scale is 0.885, Cronbach's α The coefficient is 0.927.

4.2.3. Evaluation of the implementation effect of mixed teaching

After the course, the Chinese version of the inquiry community-scale translated and revised by LAN Guoshuai et al. [17] was used to investigate the students in the experimental group and evaluate the level of three kinds of sense of existence in the inquiry community, so as

Yajuan Sun

to comprehensively and deeply understand the implementation effect of the mixed teaching course of economics course. The scale is divided into three dimensions: teaching existence, social existence and cognitive existence, with a total of 27 items. Using Likert 5-level scoring method, each item is divided into 5 levels from "very disagree" to "very agree", with 1-5 points respectively. Cronbach's of the scale α The coefficient is 0.952.

5. Results

5.1. Comparison of theoretical test scores

The test score of the experimental group was (80.17±6.84) and that of the control group was (72.06±7.03). There was significant difference between the two groups ($t = 7.928$, $P < 0.001$).

5.2. Comparison of scores of critical thinking ability evaluation scale

The scores of the critical thinking ability evaluation scale of the two groups of students are shown in Table 1. There was no significant difference in the total score of the scale ($t = -0.285$, $P = 0.649$). Among them, the score of truth seeking dimension in the experimental group was 39.51 and that in the control group was 37.37. The difference was statistically significant ($t = 3.113$, $P = 0.027$); The score of analytical ability dimension was 43.69 in the experimental group and 41.53 in the control group. The difference was statistically significant ($t = 1.327$, $P = 0.036$).

Table 1: Comparison of scores of critical thinking ability evaluation scale between the two groups

Group Dimension	Test group	Control group	T value	P
Truth-seeking	39.51±7.25	37.37±6.60	2.113	0.027
Open-minded	42.75±5.23	42.81±5.34	-0.793	0.538
Analytical ability	43.69±6.12	41.53±6.13	1.327	0.036
Systematic ability	39.79±5.67	40.76±6.01	-1.291	0.199
Self-confidence	38.93±6.34	39.38±6.24	-1.034	0.233
Thirst for knowledge	44.97±7.36	45.69±7.58	-0.239	0.245
Cognitive maturity	44.38±7.42	45.65±7.52	-0.076	0.314
Total score	294.02±30.28	293.19±30.44	-0.285	0.649

**Research on the Application of Hybrid Teaching Based on a Community of Inquiry
Theoretical Model in Economics Course**

5.3. Score of mixed teaching implementation effect

The evaluation scores of the exploratory community scale of the experimental group before and after the mixed teaching mode learning are shown in Table 2. It can be seen from Table 2 that after the intervention of teaching mixed teaching mode, the scores of students in the experimental group in the three dimensions of teaching presence, social presence and cognitive presence are higher than those before mixed learning, and the differences in the scores of the three dimensions are statistically significant ($P < 0.05$). After blended learning, the five items with the highest score in the inquiry community scale focused on teaching presence and cognitive presence, and the five items with the lowest score focused on social presence.

Table 2: Overall scoring of inquiry community scale

Time slot	Teaching presence	Social presence	Cognitive presence
Before blended learning	3.52±0.57	3.54±0.62	3.4±0.58
After blended learning	4.31±0.45	4.22±0.53	4.28±0.49
P	0.023	0.019	0.026

6. Conclusions

6.1. Hybrid Teaching Based on the community of inquiry theoretical model is helpful to improve the score of course examination

The results show that after the course, the theoretical test scores of the experimental group are higher than those of the control group ($P < 0.001$), indicating that compared with the traditional teaching methods, the hybrid teaching based on the community of inquiry theoretical model can improve the students' course test scores. On the one hand, hybrid teaching based on the community of inquiry theoretical model can not only provide a clear and clear guiding framework for teachers to design hybrid teaching activities, but also organically integrate classroom teaching and online learning, and give full play to the advantages of hybrid teaching. On the other hand, the hybrid teaching based on the community of inquiry theoretical model embodies the educational concept of "student-centered", emphasizes the full interaction between students and students, students and teachers, emphasizes the creation of personalized and highly participatory learning experience for students, and pays attention to the support of mixed teaching to students' learning. Hybrid Teaching Based on the community of inquiry theoretical model can promote students' learning and improve students' curriculum learning effect.

6.2. The influence of hybrid teaching based on the community of inquiry theoretical model on critical thinking still needs to be observed

The results show that after the course, the scores of students in the experimental group in the two dimensions of truth-seeking and analytical ability are higher than those in the control group ($P < 0.05$), indicating that the hybrid teaching based on the exploratory community theory model has a certain impact on the development of students' critical thinking. However, there is no significant difference in the overall score of critical thinking ability between the two groups ($P > 0.05$). The reasons may be the following points [9]: first, the trust of the exploration environment is low. Influenced by the traditional educational and cultural environment, Chinese students are reluctant to actively express their thoughts and question the views of teachers or other students in the learning process. Only when students feel mutual respect and safe and friendly environment can they fully communicate and exchange, produce emotional interaction, and further expand the depth and breadth of economic problems. Second, the interaction between students is poor. The formation of students' sense of cognitive existence and social existence requires full interaction between teachers and students, and the mutual communication, guidance, affirmation and feedback between students also play an important role. Third, the educational results are of lag effect. Critical thinking ability is considered as the advanced goal of education, and its influencing factors also include students, schools and education system. Therefore, the development of critical thinking ability cannot be significantly improved in the short term, and it needs long-term follow-up investigation and research.

6.3. The mixed teaching based on the community of inquiry theoretical model enables students to obtain a good learning experience

The results show that the scores of teaching presence, social presence and cognitive presence of the students in the experimental group after participating in the mixed teaching are higher than those before participating in the mixed teaching ($P < 0.05$), indicating that the three kinds of presence in the inquiry community are relatively high in the process of Economics Curriculum design and implementation, Hybrid Teaching Based on the theoretical model of inquiry community can enable students to obtain a good learning experience. After blended learning, the five items with the highest scores in the inquiry community-scale focus on teaching presence and cognitive presence, which shows that teachers can effectively help students construct knowledge by carrying out precise teaching design and organization in combination with curriculum objectives and contents, continuously promoting students' dialogue and giving students direct guidance and feedback. After carrying out blended learning, the five items with the lowest scores focus on the sense of social existence, indicating that in the process of participating in blended teaching, students have some discomfort in the process of classroom and online interaction.

Research on the Application of Hybrid Teaching Based on a Community of Inquiry Theoretical Model in Economics Course

Teachers should adopt better schemes to establish a trustworthy and exploratory learning environment and enhance students' sense of trust and belonging, promoting effective communication between students.

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