

The Application of the Blended Teaching Model Based on the Knowledge Graph in the Course of "International Trade Practice"

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Abstract: With the development of information technology, information-based teaching technology and mixed teaching mode are widely used in education and teaching, speeding up the pace of classroom teaching reform. Based on the existing teaching theories, this article uses the idea of "knowledge graph technology + hybrid teaching mode", takes the course of "International Trade Practice" as an example, combines the existing problems in current teaching, from the purpose of the reform, the theoretical basis and supporting strategies, the design of the teaching model, the effectiveness of the implementation, and other aspects of the blended teaching model based on the knowledge graph to study. The results of the research show that the "International Trade Practice" course adopts blended teaching model based on knowledge graph for teaching practice, and has achieved good teaching results, which will help promote the further development of the research of blended teaching model based on knowledge graph.

1. Introduction

With the development of information technology, information-based teaching technology and blended teaching models have been widely used in education and teaching, and have had an important impact on the education and teaching of various subjects. The blended teaching mode is formed on the basis of in-depth reflection on the offline teaching mode, fully combining the advantages of the online teaching mode and the offline teaching mode, and transforming the traditional teaching mode through the effective "mixing" of the two [1]. It improves the learning effect and performance of students under the principle of least cost, and will continue to play an important role in future education. However, the current blended teaching of many subjects only stays on the concept, and it has not achieved the organic combination of online teaching and offline teaching, or the online and offline teaching resources cannot be effectively and rationally allocated,

so that there is widespread "light" teaching. The teaching phenomenon of "online and offline" or "offline and offline and online" can not achieve the coordination and unity of online and offline teaching. In addition, the low completion rate of online learning in blended teaching courses, shallow learning content, insufficient learning interest and learning motivation, make teachers unable to effectively carry out blended teaching, and the preset teaching effect is far from the actual learning effect which restrict the development of mixed teaching mode.

Knowledge graph is a visualization technique to describe knowledge resources and their structural relationships. It is a source of knowledge construction and deep thinking. It helps teachers and students to effectively explore the connections and laws between various knowledge points and optimize learning strategies and improve learning efficiency [2]. The concept of knowledge graph has been widely used in the field of computer science from its proposal to its development. With the continuous promotion of the application of knowledge graphs, knowledge graph has also been gradually applied in the field of education and teaching, but the application of knowledge graph in the field of education and teaching is limited to the technical level, lacking in-depth integration with education and teaching, and related research in academia is not too much. In the field of education and teaching, the knowledge graph is used for curriculum design, which can track the teaching situation of teachers and students through data collection and analysis, and provide for optimizing teaching effects, improving teaching activities, reforming teaching strategies, and transforming online and offline teaching model [3]. Therefore, with the development of information technology and the continuous transformation of education and teaching methods, the research on the application of knowledge graph in education and teaching is of great significance in this article.

Based on the above analysis, this article takes the course of "International Trade Practice" as an example, guided by the blended teaching model, combines the construction ideas of the knowledge graph with the blended teaching model, and integrates the teaching theories and teaching resources of the course to build a foundation the blended teaching model of knowledge graph, and discuss the application effect of this teaching model, in order to help students improve their learning enthusiasm and initiative, enhance learning effects, and cultivate logical thinking ability; at the same time, it will help teachers keep pace with the times and improve teaching methods and means , improve the teaching level, solve the contradiction between the teacher's preset teaching effect and the actual teaching effect in traditional classroom teaching, and realize the purpose of deep learning based on the knowledge graph-based blended teaching model[4].

2. The purpose of Adopting the Blended Teaching Model Based on Knowledge Graph in the Course of "International Trade Practice"

2.1. The Transformation of the Classroom Subject

Teachers unilaterally instill textbook content, on the one hand, which is perfunctory to the teaching work and not conducive to the teacher's own growth and development, on the other hand, which is also irresponsible to the students and not conducive to the achievement of teaching goals. At present, in the classroom of "International Trade Practices", the teaching model that focuses on teachers' lectures should be changed. Teachers should change from a lecturer to a leader, give students more learning autonomy, arouse students' learning initiative, encourage students to be passive listeners to become active participants, and participate in the discussion of teaching content and teaching methods. It gives full play to the teacher' s dominance and student' s subjectivity in

the teaching process, emphasizing that the classroom should be "student-oriented", "teacher-led, and student-oriented" [5]. Through the formulation of curriculum content, programs and rules, Teachers encourage students to use extracurricular time, use various information channels to gain in-depth understanding of the required knowledge content, form their own theoretical system, express their views and opinions in various forms in the classroom, and encourage students to become learning actors so as to achieve the purpose of teaching.

2.2. The Transformation of Classroom Teaching Methods

With the updating of classroom teaching methods and the development of information technology, the traditional teaching model also needs to keep pace with the times and undergo changes. In the current "International Trade Practices" classroom teaching, teachers should pay attention to the update and application of teaching methods, keep pace with the times, and comprehensively use knowledge graph, blended teaching, heuristic teaching methods, case teaching methods, etc. for classroom teaching reform [6].

2.3. Reorganization of Teaching Resources

The teaching resources used for the knowledge graph-based blended teaching model in the course of "International Trade Practices" are not limited to textbooks. The teaching resources of the knowledge graph-based blended teaching model are mainly video materials, case studies and other online resources. There are mainly three types of offline resources: one is the teaching resources related to the course knowledge of "International Trade Practices" and auxiliary resources such as learning programs that guide students to learn, and learning task lists. The second is a learning platform that supports online learning, such as various international trade practice platform resources, learning yuan and other online learning platforms. The third is the sharing of other resources [7].

2.4. Reconstruction of Teaching Design

In terms of teaching activity design, the blended teaching model based on the knowledge graph is communication, answering questions, and results display; in terms of teaching evaluation, the teaching evaluation method of the hybrid teaching model based on the knowledge map is more diversified and flexible, and more Student self-evaluation, student mutual evaluation, teacher evaluation, questionnaires, test scores, comparative analysis, etc.[8].

2.5. Reconstruction of Teaching Process and Teaching Content

In the course teaching of "International Trade Practices", the blended teaching model based on knowledge graph is adopted. Before class, students need to consult materials, watch videos online, communicate with group members, and seek solutions to problems according to their learning tasks and learning plans; Teachers need to make and upload teaching resources for students; publish learning task lists and learning requirements; understand students' learning conditions; make PPT for subsequent classroom teaching. In class, the teacher first guides the students to review their knowledge, conduct diagnostic tests on the students' learning, and understand the students' learning conditions before class, so as to teach students in accordance with their aptitude in class teaching; teachers and students ask questions, communicate with each other, and discuss with each other, so

that the problems can be solved. At the same time students present their plans in the classroom. After class, through diversified teaching evaluation and reflection, in turn, the teaching effect will be further improved. The whole process is based on "teacher as the leading, students as the main body", to promote students to actively construct a knowledge system in classroom activities.

In short, through the adoption of a knowledge graph-based blended teaching model in the course of "International Trade Practices", students will become the masters of the classroom, and students' learning initiative will be improved; through the use of knowledge graph, students will be cultivated in communication, program design, event planning, etc , so that students' thinking is not limited to the classroom and achieve linkage inside and outside the classroom [9]. At the same time, through the study of this course, students will have a macro understanding of international trade, master the key operating points of international trade practice, and let some interested students truly participate in international trade practice and apply what they have learned.

3. Theoretical Basis and Supporting Strategies for the Design of Blended Teaching Model Based on the Knowledge Graph

3.1. Theoretical Basis

In the course of "International Trade Practices", the design of the blended teaching model based on the knowledge graph is mainly based on the following four theories: One is the teaching viewpoint of the educator Rich Russ, which is based on the teaching conditions, organizational strategies and teaching results. Thinking of teaching model design, it is pointed out that teaching conditions mainly include teaching content and teaching characteristics. Organizational strategies are mainly divided into micro-strategy and macro-strategy. Teaching results mainly include teaching efficiency and teaching effect. The second is that Smith and Reagan jointly proposed the "Smith-Reagan Model" which "focused on teaching" and embodies the "connection-cognition" learning theory. The third is the dynamic interaction model of learners' internal characteristics, behaviors, and environment proposed by Albert Bandura. The fourth is the early "Dick-Curry" instructional design model, and the characteristic analysis of the students' internal psychological process is added to this model, and finally a complete and systematic instructional design model is formed [10].

3.2. Support Strategy

In the course of "International Trade Practice", the design of the blended teaching model based on the knowledge graph needs to realize the perfection, development, convergence and convergence of the knowledge graph. Therefore, the following four aspects of supporting strategies are needed in the design of the teaching model: One is the support in terms of teaching content. It mainly choose the teaching content of the "International Trade Practice" course that is suitable for developing the blended teaching model based on the knowledge map, through the collection and sorting of related data, the collection, screening, and integration of the knowledge map, and combine the teaching content to show students a complete knowledge map which promotes innovation in the learning process; the second is cognitive support. Through offline explanations and online self-study, students can realize the importance of knowledge graph and "International Trade Practice" courses, and promote the internalization and externalization of students' knowledge and the generation of in-depth learning; the third is technical support. Through the Neo4j system and Netdraw software, it

collect relevant data in the course teaching of "International Trade Practice", draw knowledge graphs and visually present and analyze them, and then realize real-time and in-depth thinking and learning activities; the fourth is the support of students' learning motivation. Sufficient learning motivation of students helps to enhance students' learning enthusiasm and initiative, and in turn it helps to develop the blended teaching model based on the knowledge graph in the course of "International Trade Practice", which in turn further stimulates students' learning motivation. Improve learning effect [11].

4. Design of the Blended Teaching Model Based on the Knowledge Map in the Course of "International Trade Practice"

The knowledge graph-based blended teaching model in the course of "International Trade Practice" mainly includes online and offline design. The overall is a "problem-oriented, teacher-led, student-based" dual-master teaching model, through the use of Neo4j system and Netdraw software to draw , use the knowledge graph , integrate online and offline [12], and carry out the integration, explanation and teaching effect analysis of the "International Trade Practice" course. Among them, the online teaching mode is mainly aimed at the construction of knowledge graphs. Based on the "International Trade Practice" curriculum standards, outlines, etc., it integrates various teaching resources and produces teaching videos to encourage students to independently complete online learning and teaching in class . Classroom observation, teaching testing, analysis and evaluation, teaching improvement and other main links form an effective closed loop to promote the improvement of online teaching effect; offline teaching mode mainly uses the analysis method of knowledge graph to conduct the design of teaching content in "International Trade Practice" , the production of teaching courseware and teaching plans, and the evaluation of the teaching effect after the offline teaching activities, and pass the "International Trade Practices" course under the teaching environment of "problem-oriented + teacher supervision + technology application" . The mutual influence of theory and technology, teaching process, methods and strategies, and teaching results improves the effectiveness and satisfaction of teaching results.

Take the third chapter "Delivery of Goods" in the course of "International Trade Practice" as an example, and carry out the teaching of this chapter in the accounting class N183 of Jiaying Nanhu University . There are 35 students in the N183 class of Accounting at Jiaying Nanhu University. The overall performance of the students is good who are relatively motivated and active in learning, and are willing to accept new knowledge, but the overall software operation ability of the students is not strong, and the basic knowledge of international trade is relatively weak. In response to this situation, I am committed to adopting a blended teaching model based on knowledge graph in the teaching process to promote the rapid acquisition of new knowledge by students and improve their learning efficiency. The specific implementation process of teaching is as follows.

First, upload relevant learning materials of "Delivery of Goods" and supervise students' online learning; second, introduce a new lesson of "the delivery of goods" through the knowledge graph offline ;Third, focus on the content involved in the knowledge graph; fourth , classroom display of individual knowledge graph of students ; fifth , Teaching analysis and evaluation.

5. Conclusion

In a nutshell, this article combines theory and practice to study the knowledge graph-based

blended teaching model in "International Trade Practice" course of accounting class N183 of Jiaxing Nanhu University and explore its design and application issues, basically completed the design, development and utilization of the teaching process [13]. Through statistical analysis of the teaching effect, it is concluded that the teaching model has achieved better results in the "International Trade Practice" course. The study has important theoretical and practical significance for the future application of the blended teaching model based on the knowledge graph to education and teaching. In addition, although the blended teaching model based on the knowledge graph still has technical support, teacher data literacy, teaching design and evaluation in the practice process, this model reflects the changes in teachers' teaching methods and students' learning methods in the ubiquitous teaching and learning environment. It may become a new direction for the development of in-depth integration of information technology and education and teaching in the future [14].

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References

- [1] Michael Fullan, Joanne Quinn, Joanne McEachen.(2018)*Deep learning: Engage the world, Change the world.*Thousand Oaks,CA:Corwin, 2, 21.
- [2] Kitchin, R.(2014) *The data revolution: Big Data, Open Data, Data Infrastructures and Their Consequences.* London: Sage, 3, 34.
- [3] Williamson B. (2016)*Coding the Biodigital Child: The Biopolitics and Pedagogic Strategies of Educational Data Science.**Pedagogy, culture & society*, 3, 401-416.
- [4] Fu W, Wang Q, Zhao X.(2018) *Platform-based service innovation and system design: a literature review .Industrial management &data systems*, 5, 946-974.
- [5] Schifter, C.C., Natarajan, U., Ketelhut, D.J., et al.(2014) *Data-Driven Decision Making: Facilitating Teacher Use of Student Data to Inform Classroom Instruction.* *Contemporary Issues in Technology and Teacher Education*, 4, 419-432.
- [6] Reeves, T.D., Honig, S.L.(2015) *A Classroom Data Literacy Intervention for Pre-Service Teachers.* *Teaching and Teacher Education*, 4,90-101.
- [7] Thai N T T, De Wever B, Valcke M .(2017) *The Impact of a Flipped Classroom Design on Learning Performance in Higher Education: Looking for the Best “Blend” of Lectures and Guiding Questions with Feedback.* *Computers & Education*, 4, 113-126.
- [8] Vanderlinde R, Aesaert K, Braak J V.(2014)*Institutionalised ICT use in primary education: A multilevel analysis [J]. Computers & Education*, 1,1-10.
- [9] Kong H. (2017) *Study on Construction of Ai-Based English Intelligence Classroom.* *Revista de la Facultad de Ingenieria*, 11, 560-564.
- [10] Yan-Yan L, Shuang-Gen H, Fu-Yu H. *Intelligent Classroom Assistant: the Smart Teaching Tool In Artificial Intelligent[J]. Software Guide*, 2019,(4):20- 29.
- [11] Manny-Ikan E, Dagan O, Tikochinski T B , et al. (2011) *Using the Interactive White Board in*

Teaching and Learning-An Evaluation of the smart classroom Pilot Project [J]. Interdisciplinary Journal of e-Skills and Lifelong Learning, 7,191-198.

- [12] *Siu Cheung Kong.(2014) Developing Information Literacy and Critical Thinking Skills Through Domain Knowledge Learning in Digital Classrooms: An Experience of Practicing Flipped Classroom Strategy. Computers & Education, 79,160-173.*
- [13] *Thomas Wanner, Edward Palmer. (2015) Personalising Learning: Exploring Student and Teacher Perceptions about Flexible Learning and Assessment in a Flipped University Course. Computers & Education, 88, 354-360.*
- [14] *A. Cordero, C. Jordan, E. Sanabria-Codesal. (2015) Towards a better learning models through OCWs and MOOCs. International Journal of Artificial Intelligence and Interactive Multimedia, 3,25-26.*