

Construction and Empirical Study of a Hybrid Teaching Model for Agricultural Product Online Marketing Based on the OBE Concept

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Abstract: *This paper aims to construct a hybrid teaching model for agricultural product online marketing based on the OBE concept and verify its effectiveness. Using questionnaires, interviews, and learning outcomes analysis, this study conducted a one-semester teaching practice with students majoring in marketing at an agricultural university. The results showed that this model significantly improved students' learning achievement, higher-order skills, and teaching satisfaction. The study recommends that agricultural universities strengthen the development of online teaching platforms and resources, support faculty role transformation, and establish continuous improvement mechanisms to cultivate agricultural product online marketing professionals adaptable to the digital age.*

Keywords: *OBE Concept, Hybrid Teaching, Agricultural Product Online Marketing, Teaching Model*

1. Introduction

With the rapid development of the digital economy and the in-depth implementation of the rural revitalization strategy, agricultural product online marketing has become an important means of promoting agricultural and rural modernization. However, agricultural universities currently face many challenges in cultivating agricultural product online marketing professionals adaptable to the "Internet Plus" era^[1]. Traditional teaching models often focus on theoretical instruction while neglecting practical skills development, making it difficult for students to meet the industry's demand for multi-faceted talent^[2]. To address this challenge, the integration of Outcome-Based Education (OBE) and blended learning is seen as a possible solution.

OBE emphasizes student-centeredness, output-orientedness, and continuous improvement and has achieved significant success in fields such as engineering and medicine^[3]. Blended learning, by organically integrating online and offline instruction, provides students with a more flexible and efficient learning experience^[4]. Integrating OBE with blended learning in an agricultural product online marketing course not only clarifies learning outcomes but also leverages the advantages of digital technology, demonstrating its significant value in cultivating high-quality agricultural marketing professionals^[5].

This study, using the agricultural product online marketing course at an agricultural university as a case study, constructs a blended learning model based on OBE and verifies its effectiveness through a semester of teaching. The study aims to answer the following questions: How to construct a hybrid teaching model for agricultural product online marketing based on the OBE concept? What is the implementation effect of this model in practice? What are the key factors affecting the effective implementation of this model? The research results will provide agricultural educators with a reference for teaching models and practical references, and promote the improvement of the quality of talent training for agricultural product online marketing.

2. Literature Review

2.1 Core Principles and Development of OBE Education Concept

The OBE education concept originated from the basic education reform in the 1980s and was first proposed and systematically elaborated^[3]. Its core principles include "student-centered, output-oriented, and continuous improvement", emphasizing that the goal of education is to ensure that students acquire the specific results and abilities needed for their future careers and lives. In recent years, the OBE concept has been widely used in the field of higher education, especially in engineering education accreditation

(such as ABET and Washington Accord), where it has become an important standard.

In the field of agricultural education, the application of the OBE concept has gradually received attention. Xu Shiqiang and Long Anhua (2022) applied the OBE concept to an agricultural product marketing course, conducting practical exploration in four areas: optimizing teaching strategies, designing teaching objectives, optimizing the teaching process, and improving teaching evaluation. Zhao Guiyu et al. (2024) studied the development path of an agricultural product marketing course based on the OBE concept, emphasizing the need to set clear learning objectives and outcomes, improve the teaching and learning assessment system, incorporate interdisciplinary knowledge and practical experience, and establish a continuous improvement and feedback mechanism for the course.

2.2 Development and Application of Blended Learning Models

Blended learning combines the flexibility of online learning with the interactive advantages of offline teaching and has become a key direction of contemporary educational reform. Kaleta et al. (2007) noted that blended learning can improve student engagement and learning outcomes, especially in practical courses. The application of blended learning has also achieved positive results in agricultural education. Li Xiaotao and Gao Haiyan (2016) demonstrated that blended learning helps cultivate students' innovative abilities^[6].

In recent years, the application of blended learning in agricultural product online marketing courses has gradually increased. Xu Shiqiang and Long Anhua (2022) found through practice that high-quality hybrid teaching reform requires focusing on four key areas: optimizing teaching strategies, designing teaching objectives, optimizing the teaching process, and improving teaching evaluation. Furthermore, these efforts require strengthening student guidance and supervision, developing online teaching materials and platforms, and enhancing teachers' information processing capabilities. Zhao Guiyu et al. (2024) developed a hybrid online course on agricultural product marketing based on the FD-QM standard, systematically exploring aspects such as course objective design, teaching activity design, and assessment and evaluation design.

2.3 Current Status and Challenges of Agricultural Product Online Marketing Education

As an important component of agricultural education, agricultural product online marketing education faces new development opportunities and challenges. With the rapid development of "Internet + Agriculture," the demand for agricultural product online marketing talent is growing^[1]. However, current agricultural product online marketing education still faces numerous challenges: first, a disconnect between theory and practice, resulting in insufficient practical skills among students; second, slow updating of teaching content, making it difficult to adapt to the rapid development of digital marketing technology; and third, a monotonous teaching approach, which fails to stimulate students' learning interest and innovative spirit^[2]. To address these issues, agricultural educators have attempted various teaching reforms. Xu Shiqiang and Long Anhua (2022) employed the OBE concept and a blended teaching model in their agricultural product marketing course and found that this integrated approach effectively improved students' comprehensive abilities. Zhao Guiyu et al. (2024) developed a blended online course on agricultural product marketing based on the FD-QM standard. Through clear and measurable objectives, diverse teaching activities, and comprehensive and scientific assessments, they achieved significant results.

3. Research Methods

3.1 Research Background and Participants

This study selected second-year students majoring in E-commerce at an agricultural university, across two classes (n=86). The average age of the participating students was 20.3 years old, with 42% male and 58% female. All students had completed a basic marketing course and possessed a certain level of professional knowledge. To ensure research reliability, we conducted an independent sample t-test on the students' prerequisite course scores before the teaching experiment. The results showed no significant difference in basic knowledge between the two classes ($p>0.05$). The course teaching team consists of five instructors, including three professional course teachers, one industry expert from an e-commerce company, and one educational technology expert. All professional instructors have training in OBE concepts and blended learning, with an average teaching experience of 8.2 years.

3.2 Research Design

This study adopted a multi-method research design, combining quantitative and qualitative methods to collect and analyze data to comprehensively evaluate the effectiveness of the teaching model. The study was conducted in three phases:

Phase I (Pre-test): At the beginning of the semester, a questionnaire survey was conducted to assess students' prior knowledge and skills, and group interviews were conducted to understand their expectations and learning needs for the agricultural product online marketing course.

Phase II (Teaching Implementation): A 16-week teaching practice was conducted, implementing a blended learning model based on OBE concepts. The course content includes six modules: Agricultural Product Online Marketing Basics, Agricultural Product Brand Building, Agricultural Product Live Streaming Marketing, Agricultural Product E-commerce Operations, Agricultural Product Social Media Marketing, and Agricultural Product Online Marketing Planning.

Phase III (Post-test): At the end of the semester, the teaching effectiveness was evaluated through questionnaires, interviews, and learning outcome analysis, including indicators such as learning outcome achievement, development of higher-order skills, and teaching satisfaction.

3.3 Data Collection and Methods

This study used three main methods to collect data: (1) Questionnaire survey: The self-compiled "Agricultural Product Online Marketing Learning Outcome Assessment Scale" was used, which contains 45 questions and adopts the Likert five-point scoring method. The scale is divided into four dimensions: professional knowledge understanding and application, online marketing practical ability, innovative problem-solving ability and team collaboration and communication ability. Before the formal survey, we conducted a reliability and validity test on the scale. The Cronbach's α coefficient was 0.892 and the KMO value was 0.845, indicating that the scale has good reliability and validity. A total of 86 questionnaires were distributed in this study, and 82 valid questionnaires were collected, with an effective recovery rate of 95.3%. (2) In-depth interviews: Using a semi-structured interview outline, 25 students were randomly selected from the questionnaire survey participants for group interviews (5 people in each group, a total of 5 groups) to understand their perceptions and experiences of the blended teaching model. Each interview lasted about 20 minutes and was transcribed into text data, and a total of about 10,000 words of interview text was obtained. (3) Analysis of learning outcomes: Students' course assignments, project reports and final works were collected and analyzed, with a total of 82 individual assignments and 28 group project reports analyzed. Rubric rating scales were used to evaluate learning outcomes, focusing on students' knowledge application ability, practical skills and innovation ability.

3.3 Data Analysis Strategy for the paper

Quantitative data were statistically analyzed using SPSS 25.0 software, including descriptive statistics, correlation analysis and difference tests. Qualitative data were analyzed using thematic analysis, and core themes and patterns were extracted through three steps: open coding, axial coding and selective coding. To ensure research ethics, all participants signed informed consent and voluntarily participated in this study.

4. Research Results

4.1 Analysis of Learning Outcomes

Table 1: Student Learning Outcome Achievement Assessment Results (n=82)

Ability Dimension	Pre-assessment mean (standard deviation)	Post-evaluation mean (standard deviation)	t-value	Effect size (d)
Understanding and application of professional knowledge	3.12(0.45)	4.08(0.38)	15.37***	1.68
Practical skills in online marketing	2.89(0.52)	4.15(0.41)	18.22***	1.95
Innovative problem-solving skills	3.01(0.48)	4.05(0.43)	16.58***	1.81
Teamwork and communication skills	3.24(0.41)	4.22(0.35)	17.93***	1.91
Overall learning outcomes	3.07(0.38)	4.13(0.34)	21.45***	2.34

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Through a comprehensive evaluation of students' course learning outcomes, we found that the blended teaching model based on the OBE concept has achieved significant results in multiple dimensions. The learning outcomes were evaluated using multiple evidence, including test scores, assignment evaluations, project results and practical activities.

As shown in Table 1, the students' post-test scores in the four ability dimensions were significantly higher than their pre-test scores ($p < 0.001$), indicating that the hybrid teaching model based on the OBE concept effectively promoted the overall improvement of students' abilities. Among them, the improvement in online marketing practical skills was the largest (effect size $d = 1.95$), indicating that this model is particularly conducive to the cultivation of practical skills.

4.2 Development of students' higher-order abilities

Higher-order abilities include critical thinking, innovation, and the ability to solve complex problems, which are learning outcomes that the OBE concept pays special attention to. Through the analysis of students' project works and final planning proposals, we found that students showed significant progress in the following aspects:

(1) Critical thinking ability: Students can analyze practical problems in agricultural product online marketing from multiple perspectives and propose insightful solutions. For example, a student pointed out in the project report: "Different categories of agricultural products require differentiated online marketing strategies. Fresh agricultural products should focus on timeliness and supply chain security, while processed agricultural products should emphasize brand stories and cultural connotations."

(2) Innovation ability: Students demonstrated rich creativity and innovative thinking in marketing planning. For example, a group of students designed a "traceability live broadcast" marketing model for local specialty agricultural products. Consumers can learn about the growing environment and production process of agricultural products in real time through the live broadcast platform, which enhances the credibility and experience of the products.

(3) Ability to solve complex problems: Faced with real agricultural product online marketing problems, students can comprehensively apply multidisciplinary knowledge and propose systematic solutions. For example, in the final work, a student proposed a "agriculture and tourism integration" marketing plan that integrates tourism resources and e-commerce platforms to solve the problem of difficulty in selling specialty agricultural products in mountainous areas, which demonstrated strong comprehensive ability.

4.3 Students' experience and satisfaction with the blended teaching model

Through thematic analysis of the interview data, we extracted four main views of students on the blended teaching model: (1) Recognition of the combination of online and offline: Most students believe that the organic combination of online learning and offline practice helps to understand and apply knowledge. One student said: "Online learning has enabled me to master basic theories and methods, while offline practice has allowed me to truly understand how to apply this knowledge to the actual scenario of agricultural product online marketing." (2) Evaluation of project-driven teaching: Students generally believe that the real agricultural product online marketing project has greatly stimulated their interest and motivation in learning. One student said: "By operating a real agricultural product online store, I not only learned practical skills such as store decoration, product shelving, and promotion settings, but also gained a deeper understanding of the complete process and key points of agricultural product online marketing." (3) Feedback on multiple evaluation methods: Students believe that the combination of process evaluation and final evaluation can more comprehensively reflect the learning effect. One student pointed out: "Unlike traditional exams, this evaluation method focuses on our progress and efforts throughout the learning process, not just the final results." (4) Views on learning support: Students expressed satisfaction with the learning support system of teacher guidance and peer assistance. One student said: "When I encountered difficulties in live marketing practice, I could get professional guidance from teachers and experience sharing from my peers in a timely manner. This support gave me the confidence to complete challenging tasks." The satisfaction questionnaire survey results showed that 85.4% of students expressed "satisfaction" or "very satisfaction" with the hybrid teaching model, 89.2% of students believed that the model helped improve learning outcomes, and 83.7% of students were willing to recommend the course to other students.

4.4 Challenges and Facilitators in the Implementation Process

During the implementation of the teaching process, we also identified some challenges and facilitators: The main challenges include: (1) Some students are not used to independent learning in the early stage and need time to change their learning concepts; (2) The quality and diversity of online learning resources

need to be further improved; (3) The difficulty of agricultural product online marketing practice projects needs to be more accurately controlled; (4) The multi-evaluation system increases the workload of teachers. Key facilitators include: (1) policy support and resource guarantee of the school; (2) professional ability and collaborative spirit of the teaching team; (3) cooperation with agricultural product enterprises provides real project resources; (4) strong support of the educational technology platform.

5. Discussion

5.1 Effectiveness of the OBE Blended Teaching Model

This study constructed and verified a blended teaching model for agricultural product online marketing based on the OBE concept. The results showed that the model significantly improved students' learning achievement, especially in terms of online marketing practical skills (effect size $d = 1.95$). This finding is consistent with the findings of Xu Shiqiang and Long Anhua (2022), who also found that combining OBE with blended learning effectively enhances students' practical skills. This may be because the model, through its clear learning outcome orientation, focuses teaching activities more closely on developing skills. Furthermore, the organic integration of online learning and offline practice provides students with a richer and more flexible learning path, fostering deeper understanding and application of knowledge.

Furthermore, this study found that the model effectively promoted the development of students' higher-order skills, such as critical thinking, innovation, and complex problem-solving. This echoes Li Xiaotao and Gao Haiyan's (2016) research on cultivating innovative skills in the context of "Internet Plus." The OBE concept emphasizes what students can ultimately do, rather than simply what they know. This approach encourages students to apply knowledge in real-world situations and develop innovative solutions (Spady, 1994). Blended learning, on the other hand, provides students with more opportunities for exploration, experimentation, and reflection, creating conditions for the development of higher-order skills.

5.2 Innovation and Practical Value

The main innovation of this study lies in systematically integrating the OBE concept into all aspects of hybrid teaching for online agricultural product marketing, constructing a complete closed-loop system of goals, activities, evaluation, and improvement. Compared with Zhao Guiyu et al.'s (2024) curriculum development based on the FD-QM standard, this study emphasizes outcome-oriented teaching design throughout the entire process, rather than focusing solely on course quality. Compared with Xu Shiqiang and Long Anhua's (2022) study, this study provides more systematic empirical evidence, verifying the effectiveness of the model through a combination of quantitative and qualitative methods.

In terms of practical value, this study provides educators in related fields with an actionable teaching model and practical cases. The results indicate that the successful implementation of the OBE hybrid teaching model requires the following conditions: first, clear and measurable learning outcome goals; second, deeply integrated online and offline teaching activities; third, a diverse and continuous evaluation and feedback mechanism; and fourth, a data-driven culture of continuous improvement. These elements together form an integrated whole, promoting the continuous improvement of teaching quality.

5.3 Research limitations and future research directions of this paper

This study has some limitations. First, the research sample comes from a single university, and the sample size and representativeness are limited. Future research can expand the sample range and include comparative studies of multiple universities. Second, the research period is one semester, which fails to track the long-term effects of the teaching model. Subsequent research can conduct longitudinal tracking to examine students' performance in their career development after graduation. Third, the research mainly focuses on student-level learning outcomes. In the future, we can further explore the impact of teacher factors, school policies, etc. on the implementation of the teaching model. Based on the above limitations, we propose the following future research directions: Conduct multi-university collaborative research to verify the applicability of the model in different university contexts; Conduct long-term tracking research to examine the long-term effects of the teaching model; Explore the application of emerging technologies such as artificial intelligence and big data in OBE blended teaching; Study the professional development

path of teachers to support teachers in implementing OBE blended teaching.

6. Conclusions and Recommendations

Through one semester of teaching practice, this study constructed and verified a blended teaching model for agricultural product online marketing based on the OBE concept. The research results show that the model significantly improves students' learning achievement, high-level abilities, and teaching satisfaction. Based on the research results, we make the following recommendations:

For educators, we recommend: clarify the core competency requirements for agricultural product online marketing talents and formulate clear and measurable learning outcome goals; design teaching activities that deeply integrate online and offline learning to ensure the organic combination of theoretical learning and practical application; establish a diversified evaluation system to comprehensively reflect students' learning outcomes and development process; continuously improve teaching based on evaluation feedback to form a virtuous cycle of "evaluation-feedback-improvement".

For agricultural colleges, we recommend: strengthen the construction of online teaching platforms and resources to provide technical support for blended teaching; encourage and support teachers to carry out teaching reforms and establish corresponding incentive mechanisms; strengthen school-enterprise cooperation to provide students with real agricultural product online marketing practice projects; establish interdisciplinary teaching teams to promote the cross-integration of agricultural product online marketing with other majors.

Future research can further explore the application of OBE blended teaching model in different types of agricultural courses, as well as the design of personalized learning paths with technical support, to continuously promote the improvement of agricultural education quality and effectiveness.

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