



Development of a New Media Marketing and Planning Course Based on Project-Based Learning combined with Outcome-Based Education Concept to enhance Problem-Solving Ability in Advertising at Xi'an University

Gao Linna¹, Nitikorn Onyon², Mesa Nuansri³

¹ Ph.D. Candidate of course and Instruction, Valaya Alongkorn Rajabhat University
Under the Royal Patronage Pathum Thani Province, Thailand

^{2,3} Lecturer, course and Instruction Program, Valaya Alongkorn Rajabhat University
Under the Royal Patronage Pathum Thani Province, Thailand

E-mail: 276754037@qq.com, ORCID ID: <https://orcid.org/0000-0001-7862-759X>

E-mail: nitikorn@vru.ac.th, ORCID ID: <https://orcid.org/0009-0005-5171-3953>

E-mail: mesa@vru.ac.th, ORCID ID: <https://orcid.org/0009-0003-2449-3604>

Received 19/09/2024

Revised 01/10/2024

Accepted 10/11/2024

Abstract

Background and aim: At present, the phenomenon of insufficient problem-solving ability of college students in China is more prominent. The project-based learning (PBL) combined with the outcome-based education (OBE) concept provides new ideas and methods for addressing the problem of insufficient problem-solving ability among college students. The PBL combined with OBE teaching offers effective ways and means to enhance problem-solving ability. Outcome-based education concept (OBE) emphasizes student learning outcomes and focuses on the ability and qualities students acquire during the learning process. While project-based learning (PBL) enables students to participate in solving actual projects, clarifying their learning goals and outcomes, and enhancing their learning motivation and enthusiasm. This teaching model emphasizes practical ability. It focuses on cultivating students' practical ability by having them apply learned knowledge and ability in actual projects, thus improving their problem-solving and practical operation ability, which aligns with the requirements for practical ability in the advertising field. It promotes cooperation and innovation. PBL usually requires students to complete projects in groups, helping to cultivate their cooperation ability and team spirit. At the same time, during the project implementation process, students need to continuously propose innovative solutions, which also helps cultivate their innovation consciousness and innovation ability. This study aims to develop and evaluate the effectiveness of a new media marketing and planning course based on PBL combined with OBE teaching to enhance problem-solving ability in advertising students.

Materials and approaches: The study employed a three-phase research design involving phase 1 was studying the background information through reviewing documents and interviewing experts and students, phase 2 was constructing and verifying the developed course by 5 experts, and phase 3 was implementing the course with the sample of 40 junior Advertising students at Xi'an University which were derived by cluster random sampling. The research instruments used to collect data in this phase were as follows: 1) scoring rubric of students' problem-solving ability with reliability of 0.84. 2) questionnaire for students' satisfaction with the reliability of 0.75. Data collection was relevant to test papers and scales, and data were analyzed by using statistics including; means, standard deviations, t-test for dependent samples, and one sample t-test.

Results: After implementation of a new media marketing and planning course based on project-based learning combined with outcome-based education concept, it revealed that 1) posttest scores of students' problem-solving ability is greater than pretest at .01 levels of statistical significance ($t_{39} = 16.01$, $p = 0.001$). 2) students' satisfaction after implementing the course was statistically greater than the criterion of 70% at a .01 level of statistical significance ($t_{39} = 19.51$, $p = 0.001$).

Conclusion: The PBL combined with OBE teaching provides effective ways and methods for improving college students' problem-solving abilities. By clarifying learning outcomes, emphasizing practical ability, and promoting cooperation and innovation, the PBL teaching methods model can better meet the requirements for problem-solving ability in modern education and the advertising field.

Keywords: Media Marketing; Project-Based Learning; Outcome-Based Education Concept; Problem-Solving Ability

Introduction

At present, the teaching of "New Media Marketing and Planning" in advertising majors of Chinese colleges and universities is facing the following challenges and gaps: 1. Teaching content, there are problems of fast knowledge update speed and lack of systematic integration. 2. teaching methods, there are problems of insufficient practical teaching and single teaching means. 3. teaching staff, some teachers in the teaching staff may lack practical work experience in new media marketing and planning, and teachers are under great pressure to update their knowledge. 4. assessment and evaluation, there are problems of single evaluation method and lack of docking with industry standards. 5. school-enterprise



cooperation, there are problems of insufficient cooperation depth and imperfect cooperation mechanisms.

In response to the problem of insufficient problem-solving ability among college students, the country has introduced many policies and educational reforms. The "China Education Modernization 2035" requires the cultivation of high-quality talents with innovative spirit and practical ability. For the advertising major, this means cultivating students to have innovative advertising creativity, marketing strategies, and communication means, and being able to provide valuable advertising solutions for enterprises and society. This document emphasizes cultivating students' comprehensive ability. The educational goals of the advertising major should focus on cultivating students' critical thinking, teamwork ability, communication and expression ability, and problem-solving abilities. Through reforms in curriculum and teaching, students can apply theoretical knowledge to actual advertising planning, creative design, market research, and other activities, and improve students' practical operation ability and problem-solving abilities. PBL combined with OBE teaching allows students to learn and master advertising professional knowledge and ability in the process of completing projects. In this teaching mode, students need to form teams, divide labor, and cooperate to jointly complete the planning, execution, and evaluation of advertising projects, which can cultivate students' teamwork ability, communication ability, and problem-solving abilities.

Feedback from the job market also shows that some employers believe that new college graduates need to improve their ability to solve practical work problems, including in terms of understanding problems and analyzing and solving them in terms of speed and accuracy. In advertising marketing practice, insufficient problem-solving ability of college students will have serious impacts: in terms of creative planning, there will be difficulties in proposing novel schemes and low feasibility of schemes; in terms of market research, there will be inaccurate data collection and analysis and insufficient grasp of market trends; in terms of teamwork, there will be poor communication and coordination and poor conflict resolution ability; in terms of execution and evaluation, there will be weak execution ability and untimely evaluation and feedback. Therefore, it is necessary and urgent to develop current courses.

OBE(OBE) is an educational concept that is oriented towards students' learning outcomes. It originated in the United States in the 1980s and aims to emphasize that the ultimate goal of education is for students to acquire specific abilities and qualities after completing their studies to meet the needs of society and careers. Under the OBE concept, the focus of education shifts from teachers' "teaching" to students' "learning", paying attention to the actual results obtained by students in the learning process. Specifically, the OBE concept emphasizes the following aspects: First, clarify learning outcomes. Teachers and students know what the learning goals and expected outcomes are. Second, be student-centered. Teaching activities are carried out around students' needs and abilities, and students are encouraged to actively participate in the learning process. Finally, continuous improvement. Through the assessment of students' learning outcomes, teaching methods and curriculum settings are continuously adjusted to improve teaching quality.

PBL(PBL) is a teaching method that uses projects as carriers and allows students to learn and master knowledge and ability in the process of completing projects. It originated in the United States in the early 20th century and was initially mainly applied in the field of vocational education. With the continuous advancement of educational reforms, PBL has gradually been introduced into the teaching of various disciplines. The characteristics of PBL include: being driven by projects, students improving their problem-solving ability and practical operation ability by participating in the solution of actual projects, and emphasizing students' autonomous learning and cooperative learning. In the process of project implementation, students need to independently explore cooperate, and communicate to cultivate teamwork ability and innovation consciousness; pay attention to the evaluation of the learning process, not only focusing on students' learning outcomes but also paying attention to students' performance and progress in the project implementation process.

The OBE concept requires teachers to clarify specific outcomes such as students' problem-solving abilities that should be possessed after learning. This enables students to know their learning goals and conduct learning and training more targeted. Under the OBE concept, teaching activities are carried out around students' needs and abilities. When students encounter problems in the learning process, teachers will guide students to think independently and explore solutions, cultivating students' ability to solve problems independently. Through the assessment of students' problem-solving ability and other learning outcomes, teachers can timely discover students' existing problems and deficiencies, adjust teaching methods and content, and help students continuously improve their problem-solving ability.

In the process of participating in actual projects, students will encounter various real problems and challenges. By solving these problems, students can apply the learned knowledge to practice and improve their problem-solving ability and practical operation ability. PBL emphasizes students' autonomous learning and cooperative learning. In the process of project implementation, students need



to independently explore problem solutions and at the same time cooperate and communicate with team members to jointly complete project tasks. This helps cultivate students' teamwork ability and innovation consciousness and improves students' problem-solving ability. PBL pays attention to the evaluation of the learning process. Teachers will pay attention to students' performance and progress in the project implementation process. Through the evaluation of students' thinking, exploration, cooperation, and other aspects of the problem-solving process, timely feedback and guidance are provided to help students continuously improve their problem-solving ability.

Combining the clear learning outcomes, student-centeredness, and continuous improvement of the OBE concept with the actual project-driven, autonomous learning cooperative learning, and process evaluation of PBL has innovated a new teaching method. This teaching method not only focuses on students' learning outcomes but also emphasizes the cultivation of students' practical ability and problem-solving abilities in the learning process, making teaching more targeted and effective.

Although new media marketing is a highly practical course, the current "New Media Marketing and Planning" course has problems such as insufficient practical teaching, single teaching methods, lack of personalized teaching, and single evaluation methods. At present, teaching may still be mainly based on theoretical lectures, and the practical teaching link is relatively weak. Students lack practical operation opportunities and it is difficult to transform theoretical knowledge into practical ability. At present, teaching methods may be relatively single, mainly relying on classroom lectures and PPT presentations. Lacking diversified teaching methods such as group discussions, case analyses, and project practices makes it difficult to stimulate students' learning interests and enthusiasm. Students' learning abilities interests and hobbies are different, but current teaching may lack personalized teaching methods and it is difficult to meet the learning needs of different students. At present, the assessment and evaluation may mainly be based on exams and assignments, and the evaluation methods are relatively single. It is difficult to comprehensively assess students' new media marketing abilities, such as practical operation ability, teamwork ability, and problem-solving ability.

The current course cannot meet the needs of students, nor can it well improve students' practical ability and problem-solving abilities. However, PBL combined with OBE teaching can improve students' problem-solving ability and course satisfaction. In PBL, students need to independently explore the problems and challenges in the project. For example, when formulating a new media marketing plan, students need to independently study the target market, competitors, and consumer needs. This process of autonomous learning cultivates students' ability to think independently and solve problems. Projects usually require students to form teams to complete. In the process of teamwork, students will face various problems, such as differences of opinion and uneven task distribution. By jointly solving these problems, students learn to communicate, coordinate, and cooperate, and improve their problem-solving ability. After the project is completed, students need to reflect on and evaluate the project. By analyzing the problems and deficiencies in the project, students can summarize experiences and lessons and propose improvement plans. This process of reflection and improvement helps students continuously improve their problem-solving ability. The OBE concept emphasizes being student-centered. PBL designs projects according to students' needs and interests. For example, if students are interested in short-video marketing, a short-video marketing project can be designed. This teaching method that meets students' needs can improve students' learning enthusiasm and participation, thereby improving course satisfaction. PBL is oriented toward students' project results. Students can see their efforts and achievements. When students complete a successful new media marketing project, they will gain a sense of accomplishment and satisfaction, thereby improving their satisfaction with the course. Under the OBE concept, PBL adopts a diversified evaluation method, not only paying attention to students' academic performance but also paying attention to students' performance in the project, teamwork ability, and problem-solving ability. This diversified evaluation method can more comprehensively reflect students' learning results, improve the fairness and credibility of the course, and thereby improve course satisfaction.

This study aims to develop and evaluate the effectiveness of a new media marketing and planning Course that is based on PBL combined with OBE to enhance problem-solving ability in advertising students.

Research Objective

The objective of this research was as follows:

1. To study the background information focusing on course components of new media marketing and planning courses to enhance the problem-solving ability of students who majored in Advertising.
2. To develop a new media marketing and planning course based on project-based learning combined with an outcome-based education concept approach to enhance problem-solving ability in advertising.



3. To determine the effectiveness of new media marketing and planning courses based on project-based learning combined with an outcome-based education concept approach to enhance problem-solving ability in advertising.

3.1 To compare students' problem-solving ability before and after the implementation of new media marketing and planning courses based on project-based learning combined with an outcome-based education concept approach.

3.2 To compare students' satisfaction after implementing the new media marketing and planning course based on project-based learning combined with an outcome-based education concept approach.

Literature Review

Theoretical Background

Constructivist learning theory, Dewey's pragmatic education theory, and situational learning theory jointly provide a theoretical foundation for PBL.

Constructivism views learning as an active process in which students construct knowledge rather than passively receiving it. PBL teaching methods offer students real problem situations and project tasks, enabling them to actively construct knowledge while solving problems. Through cooperation with peers, interaction with teachers, and interaction with learning resources, students continuously adjust and improve their knowledge structures, thus realizing the meaning construction of knowledge.

Dewey's pragmatic education theory emphasizes "learning by doing," (Dewey, 1899) believing that students should learn through practical activities and experiences. PBL teaching methods allow students to learn knowledge and ability through practical operations, inquiries, and reflections while completing projects. This teaching method focuses on students' personal experiences and enables them to obtain real learning in the process of solving practical problems.

Situational learning theory holds that learning occurs in specific contexts, and knowledge is closely connected to the context. PBL teaching methods place learning in real project situations, allowing students to learn and apply knowledge in specific contexts. This teaching method helps students better understand the meaning and value of knowledge and improves their learning effects.

Taylor's principle and competency-based education theory jointly provide a theoretical foundation for the OBE concept.

Taylor's principle emphasizes the importance of educational goals and views educational goals as the basis for selecting educational content, organizing educational experiences, and evaluating educational results. The OBE concept is oriented towards clear learning outcomes, which is consistent with the core idea of Taylor's principle. The OBE concept requires teachers to design teaching content and methods based on students' learning outcomes to ensure that students can obtain the expected abilities and qualities after learning (Kun, 2018).

Competency-based education theory emphasizes taking the cultivation of students' vocational ability as the core and focuses on improving students' practical ability and comprehensive qualities. The OBE concept also takes the cultivation of students' abilities as the core and pays attention to the actual results obtained by students in the learning process. The OBE concept requires teachers to design teaching content and methods based on students' ability needs to ensure that students can possess corresponding vocational abilities and qualities after learning.

The support of constructivism for PBL teaching methods and the OBE concept is as follows:

1. Emphasizing the dominant position of students: Constructivism believes that students are the subjects of learning, and teachers are the guides and promoters of students' learning. PBL teaching methods and the OBE concept both emphasize a student-centered approach and pay attention to students' learning needs and ability development. In PBL, students complete project tasks through independent exploration and cooperative learning to realize knowledge construction. Under the OBE concept, teachers design teaching content and methods based on students' learning outcomes, giving full play to the subjective role of students.

2. Focusing on the construction process of knowledge: Constructivism believes that knowledge is actively constructed by students in interaction with the environment. PBL teaching methods and the OBE concept both focus on students' learning processes and emphasize that students continuously explore, try, and reflect while solving problems, thus realizing knowledge construction. In PBL, students continuously adjust and improve their knowledge structures by participating in the solution of actual projects. Under the OBE concept, teachers understand students' learning situations in time through the evaluation of students' learning outcomes and provide personalized learning support for students.

3. Promoting students' cooperative learning: Constructivism believes that cooperative learning is an important way for students to construct knowledge. PBL teaching methods usually require students to form teams to complete project tasks, promoting cooperative learning among students. Under the



OBE concept, teachers can also let students complete learning tasks together through group cooperative learning, improving students' cooperation ability and team consciousness.

The support of empiricism for PBL teaching methods and the OBE concept is as follows:

1. Emphasizing the importance of practical experience: Empiricism believes that knowledge comes from experience, and students should learn through practical activities and experiences. PBL teaching methods and the OBE concept both focus on cultivating students' practical ability and emphasize that students obtain experience and knowledge in actual projects. In PBL, students accumulate practical experience and improve problem-solving ability by participating in the solution of actual projects. Under the OBE concept, teachers design teaching content and methods based on student's actual ability needs to ensure that students can possess corresponding practical abilities after learning.

2. Paying attention to students' differences: Empiricism believes that everyone's experience and cognitive style are different, so education should pay attention to students' differences. PBL teaching methods and the OBE concept can design teaching content and methods according to students' differences to meet the learning needs of different students. In PBL, students can choose project tasks according to their interests and ability to achieve personalized learning. Under the OBE concept, teachers can adjust teaching progress and methods according to students' learning outcomes and provide personalized learning support for students.

These theories and teaching methods jointly promote the improvement of students' problem-solving ability.

Providing real problem situations: PBL teaching methods and the OBE concept both emphasize placing learning in real problem situations and letting students learn knowledge and ability while solving practical problems. This teaching method helps students better understand the essence and requirements of problems and improves their problem-solving ability.

Cultivating students' autonomous learning ability: Constructivism and empiricism both emphasize the dominant position of students and encourage students to learn and explore independently. PBL teaching methods and the OBE concept cultivate students' autonomous learning ability by letting students independently choose project tasks, formulate project plans, and solve project problems. The improvement of autonomous learning ability helps students better deal with various problems and improve problem-solving ability.

Promoting students' cooperative learning: Constructivism believes that cooperative learning is an important way for students to construct knowledge. PBL teaching methods and the OBE concept both focus on cultivating students' cooperation abilities. Through group cooperative learning, students jointly complete project tasks and learning goals. Cooperative learning can promote exchanges and cooperation among students and improve students' problem-solving ability and team consciousness.

Emphasizing the application and transfer of knowledge: PBL teaching methods and the OBE concept both focus on the application and transfer of knowledge and let students apply the learned knowledge to the solution of practical problems. This teaching method helps students better understand the meaning and value of knowledge and improves students' knowledge application ability and problem-solving ability.

Providing timely feedback and evaluation: PBL teaching methods and the OBE concept both emphasize providing timely feedback and evaluation of student's learning processes and learning outcomes. Through feedback and evaluation, students can understand their learning situations and the improvement of problem-solving ability, and timely adjust learning strategies and methods to improve problem-solving ability.

Empirical Research on PBL Teaching Methods and OBE Concept

PBL combined with OBE teaching has many differences from traditional teaching methods, as follows:

I. Teaching objectives

Traditional teaching methods usually take the coverage of course content and the imparting of knowledge as the main goals. Teachers explain knowledge points to students one by one according to the teaching syllabus, and students' learning goals are mainly to master these established knowledge contents. Teaching objectives are relatively fixed, and the main measurement standard is students' degree of memory and understanding of book knowledge.

PBL combined with OBE teaching determines teaching objectives based on the learning outcomes that students can finally achieve. This outcome is not only the mastery of knowledge but also emphasizes the improvement of students' comprehensive abilities, such as problem-solving ability, teamwork ability, and innovation ability. Teaching objectives are flexible and personalized and are adjusted according to the ability and needs of different students to ensure that each student can make the greatest progress on their basis (Du, 2019).

II. Teaching process

1. Traditional teaching methods are teacher-centered. Teachers explain and impart knowledge in class, and students passively receive knowledge. The teaching process is usually one-way, lacking students' active participation and interaction. Students mainly learn by listening, taking notes, and completing homework. The course content is organized according to the chapter sequence of textbooks, and the teaching progress is relatively fixed and lacks flexibility.

2. PBL combined with OBE teaching is student-centered. Under the guidance of teachers, students learn knowledge and ability by participating in actual projects. The teaching process emphasizes students' active participation and cooperative learning. Students form groups to complete project tasks. In this process, students need to independently analyze problems, design solutions, and implement and evaluate them. The teaching content revolves around projects and is comprehensive and practical (Cai & Mao, 2009). In the process of completing projects, students need to comprehensively apply the knowledge and ability of multiple courses to improve their ability to solve practical problems.

III. Teaching evaluation

1. Traditional teaching methods mainly take examination scores as the evaluation standard and focus on assessing students' mastery of knowledge. The evaluation methods are relatively single, usually using closed-book examinations, homework, and classroom performance for evaluation. The evaluation results are often quantified scores, which are difficult to fully reflect students' learning processes and comprehensive ability.

2. PBL combined with OBE teaching takes learning outcomes as the evaluation basis and focuses on assessing students' comprehensive ability. The evaluation content includes the quality of project results, students' performance in projects, teamwork ability, innovation ability, etc. The evaluation methods are diversified. In addition to examination scores, they also include project reports, group presentations, self-evaluation, and peer evaluation. The evaluation results pay more attention to feedback and improvement (Lin, & Li, 2021). Teachers understand students' learning situations in time through evaluation results and provide personalized feedback and guidance to help students improve learning methods and learning effects.

IV. Teaching effects

1. In traditional teaching methods, students may have certain effects in terms of memory and understanding of knowledge, but they are relatively weak in practical application ability and innovation ability. Students lack the motivation and interest in active learning, and learning effects often depend on teachers' teaching levels and students' learning attitudes. It is difficult to cultivate students' teamwork ability and problem-solving abilities. After graduation, students may need a long time to adapt to the requirements of actual work.

2. The teaching effect of PBL combined with OBE teaching is that students have a greater improvement in comprehensive ability and can better adapt to the needs of future work. Students' learning motivation and interest are stimulated, and their enthusiasm for active learning is increased. Through PBL, students can cultivate teamwork spirit and problem-solving ability, improve innovation consciousness and practical ability, and lay a solid foundation for future career development.

Table 1 Comparative analysis of the characteristics of the model

Components	PBL combined with OBE teaching mode	Content-based PBL teaching mode
objective	Design the teaching objectives with social needs as the starting point.	Design the course objectives around the content of the textbook.
principle	Taking the future results as the starting point, we should reverse design the teaching content.	The teaching content is positively designed around the curriculum objectives.
content	Based on the results orientation, the teaching content is organized around the expected results.	Give priority to the teaching materials, and pay attention to the comprehensiveness of the content.
project	Projects are related to each other and more effectively promote the learning of knowledge and ability.	There is no link between the projects, and they operate independently of each other.
appraise	Multiple evaluation subjects and various methods	Take the quality of the works as the assessment standard



Components	PBL combined with OBE teaching mode	Content-based PBL teaching mode
purpose	Emphasize students' comprehensive ability to adapt to social development	Focus on the quality of works, lack of comprehensive ability cultivation

In recent years, some case studies on combining PBL teaching methods and the OBE concept in higher education in the fields of advertising and marketing are as follows:

Curriculum reform of "Advertising" major in marketing major of Hubei University of Automotive Technology: When determining the teaching objectives of the course, based on external factors such as national, social, and employer needs, the goal is to cultivate students' three core ability in advertising creativity, advertising planning, and advertising communication activities.

The teaching content integrates three knowledge modules of marketing, planning, and communication, and innovatively conducts cross-integration and matches with post-vocational ability. Build "three major teaching practice platforms," including building a "project actual combat" model relying on the school-enterprise cooperation platform and introducing relevant advertising actual combat projects of enterprises in internship bases; building a "competition-promoted learning" model relying on the discipline competition platform; building an "Internet + practice" model relying on the "Internet +" platform (Rui, 2019).

Curriculum reform of "Network and New Media Advertising" at Southwest University: Establish engineering teaching content based on the OBE model, and offer relevant professional courses in combination with college students' innovation and entrepreneurship training program projects, competitions, and student club activities, highlighting the cultivation of students' qualities and the improvement of knowledge and ability (Huan, 2022).

In the course teaching, follow the teaching method of "three main body orientations," including student main body orientation, project theme orientation, and task main body direction. Let students establish virtual advertising companies, participate in advertising projects, complete course tasks, etc., to cultivate students' core advertising abilities.

Curriculum reform of "Advertising Professional English" at Guangdong Peizheng College: The project "Teaching Innovation of Advertising Copywriting Courses under the Background of Chinese Communication Culture Dissemination" presided over by teachers of this school may involve the exploration of combining the OBE concept with advertising courses (Xiao, 2022). Although the specific details of teaching reform practices are not mentioned in detail, it can be inferred from the project name that there is certain practice in teaching innovation.

Some undergraduate colleges conduct research on online and offline collaborative teaching of "Marketing" based on OBE, build a hybrid teaching model from aspects such as teaching concepts, teaching content, teaching teams, and teaching evaluation, and conduct analyses on teaching team collaboration, online and offline teaching content collaboration, and teaching evaluation collaboration (Zhi, 2023).

Some colleges and universities build a modular teaching system in the "Marketing" course according to job requirements, continuously optimize teaching evaluation, fully apply new teaching technologies, and promote teaching innovation.

Many studies have shown that when using PBL combined with OBE teaching methods, students' problem-solving ability will be improved, as follows:

Adopting PBL methods in advertising design courses can create a real working environment and trigger students' professional experiences. Students are personally responsible for implementing from collecting materials, and project analysis to scheme design. Teachers only play the role of grasping the direction and answering difficulties. This way can fully stimulate students' potential and allow students to cultivate comprehensive professional ability in analyzing and solving problems in project practice, changing the problem of disconnection between theory and practice in traditional teaching models.

Applying PBL methods in the major of graphic advertising design in secondary vocational schools, students need to overcome and handle various problems in project work, fully apply the knowledge and ability they have learned, and solve practical problems never encountered in theoretical teaching, thereby improving students' comprehensive ability to solve practical problems and also cultivating students' hands-on ability, practical ability, and analytical ability.



The OBE concept emphasizes being oriented towards students' final learning outcomes. In the teaching process, teaching objectives and teaching contents are determined according to the actual post-ability and skill requirements of enterprises. This enables students to improve their ability more targeted in the learning process to meet future career needs, thereby indirectly improving students' problem-solving ability.

The OBE concept pays attention to diversified evaluation methods, including process assessment and practical link evaluation. This evaluation method can prompt students to continuously reflect and summarize in the learning process, improve students' understanding and recognition of problems, and then improve their problem-solving ability.

Background Considerations of Higher Education in China

Emphasizing industry-academia integration: The state encourages deep cooperation between colleges universities and enterprises and conducts collaborative education through industry, academia, and research. In the field of new media marketing and advertising education, policies support schools in establishing cooperative relationships with advertising companies, new media enterprises, etc., to jointly cultivate talents who meet the needs of the industry. For example, some local governments will introduce policies to give tax incentives and financial support to enterprises that carry out industry-academia integration and encourage enterprises to actively participate in the talent cultivation of schools (Fu, 2021).

Strengthening innovation and entrepreneurship education: With the rapid development of the new media industry, innovation, and entrepreneurship has become an important direction for talent cultivation. Educational departments encourage colleges and universities to offer innovation and entrepreneurship courses and cultivate students' innovative consciousness and entrepreneurial ability. In new media marketing and advertising education, schools focus on cultivating students' creative ability and innovative thinking and encourage students to carry out entrepreneurial practices using new media platforms.

Specific challenges faced by Chinese universities in cultivating students' problem-solving ability:
In terms of teaching methods:

Traditional teaching models dominate: In university classrooms, lecture-based teaching methods still occupy a dominant position. The model of teachers lecturing and students listening is not conducive to the cultivation of students' problem-solving ability. In this teaching model, students lack opportunities for active thinking and exploration and find it difficult to apply the knowledge they have learned to practical problems.

Weak practical teaching links: Although colleges and universities are paying more and more attention to practical teaching, in actual operation, there are still some problems in practical teaching. For example, there is insufficient time arrangement for practical teaching, practical projects are disconnected from actual needs, and instructors for practical teaching lack practical experience. All these factors affect the improvement of students' problem-solving ability.

In terms of curriculum setting:

Curriculum content is not updated promptly: The new media marketing and advertising industry is developing rapidly, and new technologies and new cases are constantly emerging. However, the update of university curriculum content is relatively lagging. Some textbooks and teaching contents remain in traditional marketing and advertising models and cannot meet students' needs for new knowledge, resulting in students lacking effective solutions when facing practical problems.

Insufficient integration of interdisciplinary courses: New media marketing and advertising involve knowledge from multiple disciplines, such as communication, psychology, computer science, etc. However, university curriculum settings often lack interdisciplinary integration. Students' knowledge structure is single, and it is difficult for them to comprehensively apply knowledge from multiple disciplines to solve complex problems.

In terms of teaching staff:

Lack of practical experience of teachers: Some teachers enter universities to teach directly after graduating from universities and lack practical work experience in the new media marketing and advertising industry. In the teaching process, they find it difficult to pass on problems and experiences from actual work to students, resulting in limitations in the cultivation of students' problem-solving abilities.



Imperfect teacher training mechanism: With the development of the new media industry, teachers need to continuously update their knowledge and ability. However, at present, the teacher training mechanism in colleges and universities is imperfect. Teachers lack opportunities to participate in training and learning, and it is difficult for them to keep up with the development pace of the industry, affecting teaching quality and the cultivation of students' problem-solving abilities.

Challenges and Limitations

Limitations, challenges, and potential drawbacks of the OBE concept:

1. Subjectivity in goal setting: Although OBE emphasizes being outcome-oriented when determining learning outcomes, it may be influenced by the subjective judgment of teachers. Different teachers may have different understandings and expectations of the outcomes that students should achieve, which may lead to ambiguity and inconsistency in teaching goals. In addition, the setting of learning outcomes may be overly idealized, and difficult to fully match actual work scenarios. In practical applications, students may face various complex situations that may not be fully considered in the setting of learning outcomes.
2. Complexity of evaluation: The OBE concept requires comprehensive and diversified evaluation of students' learning outcomes. However, this evaluation method may increase the complexity and workload of evaluation. Teachers need to design multiple evaluation methods, collect a large amount of evaluation data, and conduct comprehensive analysis, which is a huge challenge for teachers. At the same time, the objectivity of evaluation may also be affected. Due to the diversification of evaluation methods, different evaluators may have different evaluation criteria and focuses, which may lead to inconsistency in evaluation results.
3. High requirements for students' autonomous learning ability: The OBE concept emphasizes students' autonomous learning and self-management ability. However, some students, may lack the motivation and ability for autonomous learning and find it difficult to adapt to the learning style under the OBE concept. These students may need more guidance and supervision to achieve the expected learning outcomes. In addition, students may encounter various problems and difficulties in the process of autonomous learning. If they do not receive timely help and support, it may affect their learning effects and confidence (Lin, 2020).

Limitations, challenges, and potential drawbacks of PBL teaching methods:

1. Complexity of implementation: PBL teaching methods require teachers to design and organize actual project tasks, which is a huge challenge for teachers. Teachers need to have rich project experience and teaching ability to effectively guide students to complete project tasks. At the same time, PBL teaching methods require a large amount of time and resource investment. Students need to spend a lot of time on project research, scheme design, implementation, and evaluation, which may affect the teaching progress and course arrangement. In addition, PBL teaching methods also require schools to provide corresponding teaching resources and support, such as laboratories, equipment, and funds.
2. Demand for teacher training: PBL teaching methods require teachers to have interdisciplinary knowledge and the ability to guide students to complete comprehensive project tasks. However, at present, most teachers are trained under the traditional disciplinary education model and may lack the knowledge and ability required for PBL. Therefore, schools need to provide corresponding training and support for teachers to help them master the methods and techniques of PBL teaching methods. However, teacher training requires a large amount of time and funds, which is a huge challenge for schools.
3. Potential resistance from students: For students who are accustomed to traditional teaching methods, PBL teaching methods may bring some discomfort and resistance. Traditional teaching methods emphasize teachers' lectures and students' passive acceptance, while PBL teaching methods emphasize students' active participation and cooperative learning. Students may need some time to adapt to this new teaching method, and they may encounter various problems and difficulties in the process of project implementation. In addition, PBL teaching methods may bring some pressure to students. Students need to complete project tasks within a limited time and bear certain responsibilities and risks. For some students, this pressure may affect their learning effects and confidence.

In conclusion, although PBL combined with OBE teaching methods shave many advantages, there are also some limitations, challenges, and potential drawbacks. In practical applications, we need

to fully recognize these problems and take corresponding measures to solve them. For example, when determining learning outcomes, we should fully consider students' actual needs and future development to ensure the practicability and operability of learning outcomes; when evaluating students' learning outcomes, we should establish a scientific and reasonable evaluation system to ensure the objectivity and fairness of evaluation; when implementing PBL, we should strengthen teacher training and teaching resource construction to improve teachers' teaching ability and project implementation effects; at the same time, we should also pay attention to students' learning needs and psychological states to help students adapt to new teaching methods and improve students' learning effects and confidence.

Conceptual Framework

The research title New Media Marketing Planning Course Based on project-based Learning Combined with Outcome-based Education Concept to Enhance Problem-solving Ability was designed as the conceptual framework as follows;

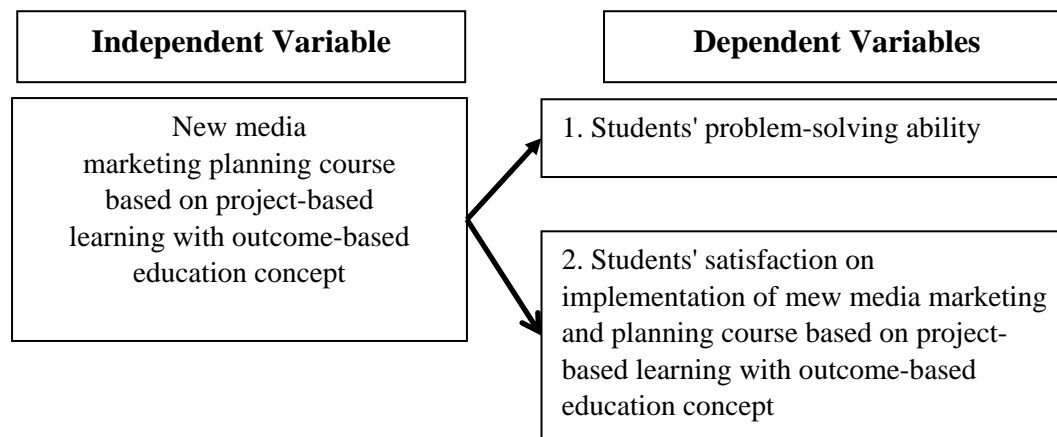


Figure 1 Research Conceptual Framework

Methodology

Experimental design

The one-group pretest-posttest design (Campbell and Stanley, 1963) was used as a procedure to investigate the effectiveness of course implementation as shown in the following figure.

Group	Pretest	Treatment	Posttest
Experimental	O ₁	X	O ₂

O₁ was measurement of the problem-solving ability of students who majored in advertising before its implementation.

X was instructed through a New Media Marketing and Planning Course based on PBL combined with OBE concept.

O₂ was measurement of the problem-solving ability and satisfaction of students who majored in advertising after its implementation.

Participants: The participants in this study were 40 junior students majoring in advertising at Xi'an University.

Research Instrument: Research instruments were the tools for researching to collect data. The research instruments which were used in this study were as follows;

1. Experimental instruments

1.1 The New Media Marketing and Planning Course based on PBL combined with OBE Concept.

1.2 Lesson plans related to New Media Marketing and Planning Course based on PBL combined with OBE Concept

2. Instruments for collecting data: There were 2 research instruments to measure dependent variables as follows;



1) Scoring rubric of problem-solving ability: the reliability of the scoring rubric was computed by using the formula of Cronbach's alpha coefficient at 0.84.

2) Questionnaire for students' satisfaction toward the New Media Marketing and Planning Course based on PBL combined with OBE concept: the reliability of the questionnaire was computed by using the formula of Cronbach's alpha coefficient at 0.75.

Data Collection

The developed course was implemented for participants in the semester of the 2023 academic year. The procedures of data collection during the development course implementation process were as follows:

Firstly, the sample was given the scoring rubric of students' problem-solving ability. Secondly, the sample was learned through the New Media Marketing and Planning Course based on PBL combined with the OBE concept. Finally, the sample was given the scoring rubric of students' problem-solving ability which was used in the pretest and students' satisfaction questionnaire to express their opinion toward the course after its implementation.

Data Analysis

According to the research objectives, the statistical approach used to analyze the data was as follows;

1) Statistics used to determine the different significance at.01 level of scores on students' problem-solving ability before and after learning through New Media Marketing and Planning Course based on PBL combined with OBE concept to enhance problem-solving ability by using t-test for dependent samples.

2) Statistics used to determine the student's satisfaction toward the New Media Marketing and Planning Course based on PBL combined with the OBE concept to enhance the problem-solving ability of college students after learning with the criterion by using a t-test for one sample.

Research Results

According to the research objectives, the results were as follows:

1. The results of studying background information data for course development

The results from studying the background data could be divided into 2 types: 1) the results of studying the relevant literature for this study and 2) the results of teachers and students interviewed about problems.

By consulting well-known domestic and foreign academic databases in education and psychology, such as CNKI and Web of Science, a large number of research literature on constructivist learning theory, Dewey's pragmatic education theory, situated learning theory, Tyler's principle, competency-based education theory, as well as OBE concept and PBL have been obtained. This literature covers the application and practical exploration of related theories in different disciplinary fields, providing rich theoretical support and empirical evidence for this research.

Thoroughly studying pragmatic education classic works such as Dewey's "Democracy and Education", and extracting the core viewpoints of pragmatic education theory and its inspirations for educational practice.

Paying attention to reports on educational innovation, curriculum reform, and teaching method improvement released by domestic and foreign educational research institutions to understand the hot issues and development trends in the current educational field. These reports involve practical cases and experience summaries of PBL under the OBE concept, providing practical references for research.

Constructivist learning theory has gradually emerged since the 1980s. It emphasizes that learners actively construct knowledge through interaction with the environment based on their existing knowledge and experience. In the "New Media Marketing Planning" course, students can actively explore and construct a knowledge system of new media marketing planning through PBL in real new media marketing situations, and improve their problem-solving ability.

Dewey's pragmatic education theory emphasizes that education is life and school is society. It advocates cultivating students' practical ability through practical activities. PBL provides students with opportunities for practice in actual new media marketing projects. It is in line with the concept of pragmatic education theory and helps students apply the learned knowledge to the solution of practical problems and improve their problem-solving ability (Xia, 2019).



Situated learning theory believes that learning occurs in specific situations. Knowledge can only be understood and applied in real situations. In the "New Media Marketing Planning" course, creating real new media marketing situations through PBL allows students to learn and practice in situations, enabling them to better understand and apply new media marketing knowledge and improve their problem-solving ability.

Tyler's principle is a curriculum development theory proposed by the famous American curriculum theorist Tyler (1949) in the early 20th century. It emphasizes the determination of curriculum goals, the selection and organization of learning experiences, and curriculum evaluation. The OBE concept emphasizes being oriented by learning outcomes and has certain similarities with Tyler's principle. Tyler's principle provides a theoretical basis for curriculum design and teaching implementation under the OBE concept, helping to ensure the effectiveness and pertinence of PBL in the "New Media Marketing Planning" course.

Competency-based education theory emphasizes cultivating students' practical ability as the core and pays attention to students' performance and ability improvement in actual work. PBL under the OBE concept aims to cultivate students' problem-solving abilities and is in line with competency-based education theory. Competency-based education theory provides specific methods and strategies for the implementation of PBL in the "New Media Marketing Planning" course.

OBE (Outcome-based Education) is an education concept oriented by student learning outcomes. It emphasizes the expected learning outcomes that students should achieve during the learning process and ensures that students can achieve these outcomes through the design and implementation of teaching processes. In the "New Media Marketing Planning" course, applying PBL under the OBE concept can clarify students' learning goals and expected outcomes. Through project implementation and evaluation, it promotes the improvement of students' problem-solving abilities.

With the rapid development of new media, new media marketing planning has become an important means of enterprise marketing. The "New Media Marketing Planning" course aims to cultivate students to master the theories and methods of new media marketing planning and improve students' practical ability and problem-solving abilities. PBL, as a student-centered teaching method, can provide a practical platform for the "New Media Marketing Planning" course. It allows students to apply new media marketing knowledge in actual projects, solve practical problems, and improve their problem-solving ability.

In conclusion, the key theories in the literature review provide a solid theoretical foundation for researching the improvement of students' problem-solving ability in "New Media Marketing Planning" through PBL under the OBE theory. The relevance of these theories to the research topic lies in that they jointly emphasize the cultivation of students' initiative, practicality, and problem-solving ability in the learning process. They provide theoretical support and methodological guidance for the application of PBL in the "New Media Marketing Planning" course. At the same time, through the comprehensive application of these theories, it is possible to solve the possible generation gaps in the field of new media marketing planning education in the existing literature and promote teaching reform and innovation in this field.

PBL takes projects as teaching units, and each project has relatively independent teaching themes and key points, which are specifically explained through multiple tasks. Each task is refined through several examples. Each project also contains structural elements that have been specially designed, such as design objectives, design effects, design ideas, operation steps, knowledge links, small conclusion exercises, and so on. Therefore, these multi-task designs create problem situations and give students more opportunities to face problems on their own. There is a certain relationship between PBL and problem-solving ability. Problem-solving ability is reflected in the process of problem-solving, and the process of problem-solving is not only the process of exploring the problem but also the process of improving the problem-solving ability of learners. Project course teaching provides students with the opportunity to experience problem-solving. Through PBL, to help learners achieve the teaching objectives of the course, but also to enable students to solve problems independently or collaboratively in the stage of completing tasks again and again. In this process, students can gradually change from evading problems to motivational problem-solving, and then to being able to solve problems independently and actively, gradually cultivate students' problem awareness, and change students'



attitudes towards problems. Form active problem-solving thinking, to achieve the cultivation of students' problem-solving ability in project teaching (Yan, 2024).

The OBE emphasizes that course construction and teaching reform take students as the main body, proceed from the social demand for talents, and reverse design the teaching process around the expected learning results, to ensure that students can acquire the corresponding ability after a period of study. The "results-oriented" concept of OBE just emphasizes what students have learned rather than what teachers have taught, which can effectively enhance the lack of orientation of comprehensive ability in PBL. Therefore, drawing on the advantages of OBE and PBL and taking students' future results as the starting point, the educational concept of cultivating students' comprehensive ability can provide new ideas for current education and teaching.

Based on the above research background, this study effectively integrates the PBL combined with the OBE concept and aims to design a PBL combined with OBE teaching and apply it in the specific classroom. It is expected that this study can optimize the design of PBL activities, enhance students' subjective initiative, break the traditional teaching materials, knowledge, and teacher-centered design ideas, and promote students' problem-solving ability.

2. The results of teachers and students interviews about problems of the current course

Data were collected through interviews with 6 teachers and 10 senior students. Through the interviews can 1) obtain the problems of learning the New Media Marketing and Planning Course contains objectives, content, teaching process, teaching materials, and evaluation, 2) the effective learning in this course, and 3) how to revise the current course.

The problem with objectives is the students lack a clear understanding of the course objectives, including knowledge, ability, and personal development goals. "we are not aware of the teacher's intention in using group projects for teaching." one student 1 said. The problems of content teaching content and format are relatively fixed. Typically, teachers follow the sequence of knowledge in the textbook for instruction, and there is a lack of organic integration between different learning materials. The classroom content is disconnected from societal needs, resulting in students lacking the necessary ability to meet those needs. Students lack interest in the textbook knowledge presented by the teacher. We feel that what the teacher imparts and what the school teaches is not applicable in the real world outside of the school premises, which discourages their motivation to learn." one student said. The problem with the teaching process is the traditional classroom teaching style is too mechanical, with a common use of a lecture and practice combined teaching approach. This approach diminishes the students' position as active participants and makes them overly reliant on the teacher. Students lack enthusiasm and proactivity in their learning. They passively receive knowledge rather than actively engage in the learning process. Their agency remains underutilized, leading to a gradual sense of disinterest, and their practical ability remains underdeveloped. The problem with teaching materials is the pace of updating teaching materials lags behind the rate of societal development, and the variety of materials is insufficient and not very practical. The problem of evaluation is the lack of a practical, fair, and reasonable course assessment mechanism. Effective learning is to mobilize the enthusiasm of students. To change the traditional teacher-centered single teaching approach of the classroom, teachers should provide professional and detailed guidance for students to complete the project, to ensure that students understand the evaluation composition and evaluation approach of the course.

The identified problems from the interviews with students and teachers have significant implications for the development of the current course.

1. Problem of teaching objectives

Since the current course does not aim at improving students' specific abilities and practice nor investigates the needs of society and workplace requirements for student's abilities, the new course design needs to start by conducting in-depth research on these aspects. The OBE concept is introduced in the determination of course objectives. According to the social needs of society, the ability of students to improve, the course objectives and teaching tasks are determined, and the project tasks are finally determined. The instructional objectives should be established based on the demands of society and the ability required in the workplace. This will ensure that students are learning abilities that are relevant and useful for their future careers. By reversing the current approach of letting teaching content

determine instructional objectives, PBL combined with OBE teaching can make the learning process more student-centered and focused on developing practical ability.

2. Problem of teaching content

To address the issue of outdated and boring textbooks and the disconnect between school-learned content and actual job requirements, the course PBL combined with OBE teaching design should move away from relying solely on textbooks. Instead, instructional content should be designed with a focus on the course objectives determined based on societal and workplace needs. Providing students with real-world case studies, industry trends, and practical examples can make the content more engaging and relevant.

3. Problem of teaching process

To overcome the influence of current teaching on PBL activities, the course design should ensure that projects are not centered around textbook content but are linked to real-world problems and challenges. Projects should be designed to be interconnected and integrated, allowing students to build on their knowledge and ability as they progress through the course. The course PBL combined with OBE teaching encourages students to take initiative and explore beyond the textbook will foster a more active learning environment.

4. Problem of teaching materials

Given the slow pace of content and technology updates in current teaching materials, the developed course design incorporates a variety of resources. This can include online resources, industry reports, guest lectures from professionals, and collaborative projects with industry partners.

5. Problem of Assessment

To address the lack of emphasis on peer and self-assessment and the overemphasis on final presentation quality, the course PBL combined with OBE teaching put a new assessment system. The course PBL combined with OBE teaching incorporates peer and self-assessment will encourage students to take more responsibility for their learning and provide them with valuable feedback from their peers. The developed course PBL combined with OBE teaching considers students' performance and progress throughout the course, rather than just the outcome. The developed course PBL combined with OBE teaching developed a quantifiable assessment system.

In conclusion, by addressing these identified problems, the developed course design can be transformed to better meet the needs of students and society. The PBL combined with OBE teaching can enhance students' problem-solving ability and prepare them for future careers.

3. The results of the course development

3.1 The results of the draft of the course

The New Media Marketing and Planning Course based on PBL combined with OBE concept comprised of 6 components; 1) course principle, 2) course objectives, 3) course content, 4) course teaching steps, 5) course materials, and 6) course evaluation.

The course principle of being result-oriented and aiming at improving students' problem-solving ability sets the direction for the entire course. Defining the expected result of students' problem-solving ability that they should possess after completing the course makes all teaching activities targeted. Teachers always design and adjust around this goal during the teaching process to ensure that students move forward in the direction of improving their problem-solving ability. At the same time, through PBL, allowing students to apply knowledge and ability in real situations to solve practical problems helps students combine theoretical knowledge with practical problems and exercise their ability to analyze problems, propose solutions, and put them into practice.

The goal of cultivating students' teamwork ability, communication ability, and problem-solving ability directly points to the improvement of problem-solving ability. Teamwork enables students to pool their wisdom, view problems from different angles, and jointly solve difficulties by giving play to their respective advantages. Good communication ability helps students accurately express their views and understand others' ideas in cooperation, promoting the effective solution of problems. Taking problem-solving ability as one of the goals will guide teachers to pay attention to cultivating students' ability in this aspect during the teaching process and exercise students' problem-solving thinking and methods through various teaching activities and project tasks.

Design course teaching steps according to course goals, and each step supports the improvement of students' problem-solving ability. Specifically, as follows:



Step 1: Determine expected learning outcomes (improve students' problem-solving ability).

Under the OBE concept, first, clarify the important goal of improving students' problem-solving ability after completing PBL. This step provides a clear direction and goal for the entire teaching process.

By clarifying the expected outcome of problem-solving ability, both teachers and students can recognize the importance of problem-solving in the entire learning process. Students understand the direction of their ability improvement they need before starting the project, so they can invest energy more targeted in the subsequent learning and actively think and explore solutions to problems.

Step 2: Select a project: stimulate interest.

Selecting a project with practical significance and challenges can stimulate students' curiosity and thirst for knowledge. When students face real and complex problem situations, they need to mobilize their existing knowledge and experience and try to analyze problems from different angles. For example, in the new media marketing planning project, choosing to develop a marketing plan for a new e-commerce brand, students will actively think about how to understand target customers, select appropriate marketing channels, and formulate attractive promotion strategies, thus starting the problem-solving process.

Step 3: Make a plan: break down problems.

In the planning stage, students break down complex project problems, which helps them understand problems more systematically. Divide big problems into small ones and clarify the relationship between each small problem and the sequence of solutions. Through this process, students learn to analyze the structure of problems and cultivate logical thinking ability. For example, in the new media marketing project, students can break down the problem into small problems such as market research, brand positioning, content creation, and channel promotion, and analyze and solve them one by one to improve the efficiency and accuracy of problem-solving.

Step 4: Activity exploration: investigation and research, collaborative completion.

The activity exploration method of group collaboration encourages communication and cooperation among students. In a team, students can share different viewpoints and ideas and jointly discuss problem solutions. This kind of cooperation not only broadens the perspective of problem-solving but also cultivates students' communication ability and teamwork spirit. For example, in the new media marketing project, team members may be good at different fields respectively. For example, some are good at data analysis and some are good at copywriting. Through collaboration, they can give full play to their respective advantages and better solve problems.

Step 5: Project completion stage: project monitoring and sharing viewpoints.

Monitoring during the project development process allows students to discover problems in time and adjust solutions. Continuously paying attention to the progress of the project helps students maintain sensitivity to problems and continuously optimize problem-solving strategies. At the same time, sharing viewpoints can enable students to obtain new inspiration from others and further improve their solutions. For example, in the new media marketing project, group discussions are held regularly to share project progress and encountered problems and jointly find solutions to improve the quality of problem-solving.

Step 6: Result sharing stage: presentation and communication, achievement exchange.

In the result-sharing stage, students reflect and summarize the problem-solving process by presenting and communicating project results. During the presentation process, students need to expound the problem-solving methods and achieve results, which helps them organize and deepen their thinking. At the same time, listening to others' feedback and suggestions can enable students to discover their deficiencies in the problem-solving process and provide experience and lessons for future problem-solving. For example, by holding a new media marketing project achievement presentation meeting, students can learn from the achievements of other groups and continuously improve their problem-solving ability.

Step 7: Evaluation and feedback.

Evaluate students' project results and give timely feedback. Evaluation can be carried out according to the predetermined expected learning outcomes, focusing on examining students' performance in problem-solving. Feedback can help students understand their advantages and disadvantages and clarify the direction for improvement. For example, in the evaluation of new media marketing projects,

teachers can evaluate students in terms of problem-analysis ability, innovation of solutions, and implementation effects, and provide students with specific improvement suggestions to promote the continuous improvement of their problem-solving ability.

In conclusion, each component of the developed course well supports the development of students' problem-solving ability.

3.2 The results of the course evaluation by experts

The finding of course document evaluation by five experts before implementation revealed that the appropriateness and congruence of course document evaluated by experts showed the experts' average score was 4.94, with a standard deviation of 0.13. The results showed that the level of the New Media Marketing and Planning Course based on PBL combined with the OBE concept was very high.

Moreover, five experts evaluated the 7 lesson plans according to the New Media Marketing and Planning Course based on PBL combined with the OBE concept. In the 15 items of each lesson plan evaluation form, the experts' average score ranged from 4.90 to 4.96, with a standard deviation ranging from 0.09 to 0.19. It was revealed that all lesson plans were very high level. According to expert evaluation, the analysis results showed that lesson plans of the New Media Marketing and Planning Course based on PBL combined with the OBE concept met the requirements of improving problem-solving ability and could be used in the teaching of New Media Marketing and Planning Course.

4. The results of the course implementation

4.1 The finding of comparison of students' problem-solving ability before and after learning through the New Media Marketing and Planning Course

The findings of the comparison of student's problem-solving ability between the pretest and posttest which were analyzed by using a t-test for the dependent sample were presented in Table 2.

Table 2 The finding of comparing the different scores of students' problem-solving ability before and after implementation of the New Media Marketing and Planning Course based on PBL combined with OBE concept (n = 40)

Group	n	Pretest scores		Post-test scores		t	p	Effect size
		M	SD	M	SD			
Experimental group	40	76.61	7.50	82.34	6.13	16.01**	0.001	2.53

** $p < 0.01$

As presented in Table 1, the pre-test average score of students' problem-solving ability was 76.61 with a standard deviation was 7.5 and the post-test average score of students' problem-solving ability was 82.34 with a standard deviation was 6.13. In addition, it aims to examine different scores before and after the implementation of the New Media Marketing and Planning Course based on PBL combined with the OBE concept. The findings in the above table showed that students' problem-solving ability after course implementation was greater than before its implementation at .01 level of statistical significance ($t_{39} = 16.01$, $p = 0.001$). The effect size of Cohen's d in this study was 2.53, it was considered to be a large effect of learning through the New Media Marketing and Planning Course based on PBL combined with OBE concept on students' problem-solving ability.

4.2 The finding of comparison of students' satisfaction after implementation of the New Media Marketing and Planning Course based on PBL combined with OBE concept

The findings of a comparison of students' satisfaction after implementation of the New Media Marketing and Planning Course based on PBL combined with the OBE concept with the criteria of 3.51 scores which were analyzed by using a t-test for one sample were presented in the table 3.

Table 3 The finding comparing the different scores of students' satisfaction after implementation of the New Media Marketing and Planning Course based on PBL combined with OBE Concept with the criteria set at 3.51 scores

Group	n	Full score	Criteria score	Mean	SD	t	p
Experimental group	40	5	3.51	4.33	0.72	19.51**	0.001

** $p < .01$

As presented in Table 2, the average score of 40 students' satisfaction questionnaire after implementation of the New Media Marketing and Planning Course based on PBL combined with the OBE concept was 4.33, and the standard deviation was 0.72. Moreover, the comparison of students' satisfaction after implementation with the criterion revealed that students' satisfaction after course implementation was statistically higher than the criterion of 3.51 at .01 level of statistical significance ($t_{39}=19.51$, $p=0.001$).

Discussion

1. Discussion of studying the background information for course development

This study found that through the implementation of a New Media Marketing and Planning Course based on PBL combined with OBE, students' problem-solving abilities have been significantly improved.

By comparing the results of this study with previous research results, the following findings are obtained: Comparing the improvement effects of PBL and OBE on students' problem-solving ability in existing research with the results of this study, it is consistent that students' problem-solving ability has been significantly improved. These were in line with Wang and Wu (2020) who conducted research which indicated that after PBL combined with OBE, students' problem-solving abilities have been significantly improved.

Comparing the findings with the original study find that the teaching methods of PBL and OBE in existing research have similarities and differences with the methods adopted in this study. Different teaching methods have different impacts on students' problem-solving ability.

Understanding the feedback and satisfaction of students on PBL and OBE courses in existing research and comparing them with the student feedback in this study, it is concluded that students' views and experiences of the courses are the same, but the satisfaction levels are different.

Comparing the course design and implementation details in existing research with this study. This includes aspects such as course objectives, project settings, teaching activities, and evaluation methods. Different course designs have different impacts on students' problem-solving abilities.

The results of this study are consistent with many existing research results that can be found, indicating that PBL and OBE have a certain degree of universality in improving students' problem-solving ability in new media marketing and planning courses. The effectiveness and generalization of these methods can be further explored.

The results of this study also have some contradictions with existing research. The analysis of the reasons is that differences in research methods, research objects, course design, and other aspects have led to different results. Therefore, the application effects of PBL and OBE in different contexts are different.

This study has limitations, but its contribution provides a reference for follow-up research.

2. Discussion of development of the New Media Marketing and Planning Course based on PBL combined with OBE concept.

In various disciplinary fields, educators should design clear learning outcomes according to course objectives and students' needs. These outcomes should be specific, measurable, and related to practical problem-solving ability. For example, in mathematics courses, the learning outcome could be that students can apply mathematical knowledge to solve problems in real life. In history courses, the learning outcome could be that students can analyze historical events, draw lessons from them, and propose solutions to current social problems.

Educators should choose project topics that are closely related to disciplinary content and have practical significance. Project topics should be challenging to a certain extent to stimulate students' learning interest and motivation for problem-solving. For example, in physics courses, a project topic could be designing an energy-saving device. In biology courses, a project topic could be researching local ecological environment issues.

During the teaching process, educators should actively promote teamwork and communication among students. This can be achieved through group activities, team projects, and other means to allow students to learn and grow through cooperation. For example, in computer science courses, students can be arranged to complete a software development project in groups. In this process, students need to divide labor, communicate, and jointly solve the problems encountered.

Educators should provide necessary support and feedback during students' project implementation. This includes providing learning resources, answering questions, and guiding students' problem-solving methods. For example, in literature courses, when students conduct literary work analysis projects, educators can provide



relevant literary theories and analysis methods, and at the same time provide feedback and evaluation on students' analysis results to help students improve their problem-solving ability.

Educators should encourage students to engage in autonomous learning and reflection. This can be cultivated by assigning autonomous learning tasks and requiring students to write learning reflection diaries. For example, in music courses, students can autonomously learn different styles of musical works after class and reflect on their learning processes and feelings to improve their music appreciation and creative ability.

In conclusion, the combination of PBL and OBE teaching provides an effective way to improve college students' problem-solving ability. Educators can apply this finding to teaching in various disciplinary fields by designing clear learning outcomes, choosing appropriate project topics, promoting teamwork and communication, providing support and feedback, and encouraging autonomous learning and reflection. Develop more effective teaching models and cultivate students' problem-solving ability and comprehensive qualities.

3. Discussion of implementation of New Media Marketing and Planning Course based on PBL with OBE Concept to enhance students' problem-solving ability and their satisfaction toward the course

This study has several limitations that may have influenced the results. For example, the sample size is only 40 people and it is focused solely on students from one university. Future research could explore the long-term impact of PBL teaching methods and the OBE concept on problem-solving ability, or investigate the effectiveness of this combined teaching method in different educational environments or among a more diverse student population.

This study on improving students' problem-solving ability through the combination of the OBE concept and PBL teaching methods has theoretical contributions in the fields of educational psychology and curriculum design.

In the field of educational psychology: It emphasizes the stimulating effect of outcome-oriented learning on students' intrinsic motivation. The OBE concept clarifies students' learning goals and expected outcomes, enabling students to see the direction and value of their efforts and thus enhancing their intrinsic motivation for learning. This increase in intrinsic motivation helps students be more actively engaged in problem-solving and improve their problem-solving ability. It confirms the effectiveness of PBL teaching methods in cultivating students' problem-solving ability. Through the implementation of actual projects, students face problems, analyze problems, and seek solutions in real situations. This process exercises students' problem-solving thinking and methods. At the same time, teamwork and communication in PBL teaching methods also help students view problems from different angles and broaden their problem-solving ideas. It provides empirical support for the learning transfer theory. The OBE concept and PBL teaching methods focus on combining learning outcomes with practical applications, enabling students to transfer the knowledge and ability obtained in projects to other situations and improving students' learning transfer ability. This is of great significance for students to deal with various problems in future learning and life.

In the field of curriculum design: It provides a student-centered curriculum design model. The OBE concept emphasizes being oriented by students' learning outcomes. Curriculum design and teaching activities are all centered around students' needs and ability development. PBL teaching methods provide students with opportunities for autonomous learning and exploration, enabling students to exert their initiative and creativity during project implementation. This student-centered curriculum design model helps improve students' learning effects and satisfaction. It enriches the methods and standards of curriculum evaluation. The OBE concept requires a clear definition and evaluation of students' learning outcomes, which prompts curriculum designers to formulate more specific and measurable evaluation standards. At the same time, the process evaluation and diversified evaluation methods in PBL teaching methods also provide new ideas and methods for curriculum evaluation. It promotes the design and implementation of interdisciplinary courses. PBL teaching methods usually involve knowledge and ability from multiple disciplinary fields, which requires curriculum designers to break disciplinary boundaries, integrate the contents of different disciplines, and design interdisciplinary project courses. The design and implementation of such interdisciplinary courses help cultivate students' comprehensive qualities and innovation ability.

From the results of this study, a theoretical framework integrating the OBE concept and PBL teaching methods can be proposed. This framework can include the following aspects:

Clarify the goals and specific outcomes of students' problem-solving ability that should be achieved after the course. These goals and outcomes should be related to student's actual needs and future development and



be measurable and operable.

Design challenging and practical projects to allow students to apply the learned knowledge and ability to solve practical problems during project implementation. The design of projects should consider students' interests and ability levels and match them with learning goals and outcomes.

Adopt student-centered teaching methods such as group cooperation, autonomous learning, and inquiry-based learning to stimulate students' learning interests and initiative. At the same time, teachers should provide necessary guidance and support to help students solve problems encountered during project implementation.

Establish a diversified evaluation system to conduct comprehensive and objective evaluations of students' problem-solving abilities. Evaluation methods can include process evaluation, work evaluation, oral report evaluation, etc. At the same time, give students feedback promptly to let students understand their learning progress and shortcomings so that they can adjust their learning strategies promptly.

Conduct empirical tests on the proposed theoretical framework or model through methods such as experiments, quasi-experiments, or case studies. Students from different disciplines and grades can be selected as research objects to compare the teaching effects of using this framework or model with traditional teaching methods. Apply this framework or model in actual teaching and continuously improve and perfect the framework or model through teachers' reflections and students' feedback. Action research can help teachers better understand and apply this framework or model and at the same time provide a practical basis for the development of theory. Cooperate with other educational researchers, teachers, and educational institutions to jointly carry out research and practice. Cooperative research can pool wisdom from all parties, give full play to the advantages of all parties, and improve the quality and effect of research. At the same time, cooperative research can also promote the dissemination and application of theory and provide support for educational reform.

In conclusion, the research on improving students' problem-solving ability through the combination of the OBE concept and PBL teaching methods has important theoretical contributions in the fields of educational psychology and curriculum design. Future research can further test and improve the proposed theoretical framework or model and provide more effective theoretical guidance for educational practice.

Recommendations

1. Implication Recommendation

1.1 It would be beneficial to expand these recommendations to include specific strategies for integrating the PBL and OBE concepts into the curriculum more effectively. For instance, a suggestion could be made to create collaborative workshops or seminars where teachers can share best practices and successful case studies of implementing PBL and OBE in various educational settings. Additionally, establishing a support system or community of practice for educators could help in the ongoing exchange of innovative teaching methodologies and challenges encountered during the implementation.

1.2 A call for the continuous evaluation and improvement of the curriculum based on feedback from students and teachers. This can be achieved by proposing a systematic approach to gather and analyze data on the effectiveness of the course from multiple stakeholders, including students, teachers, and industry experts. Regular review meetings could be suggested, where the curriculum is assessed against the evolving industry demands and student learning outcomes. This would ensure that the course remains relevant and effective in enhancing students' problem-solving ability.

1.3 To address the limitation of small sample size and single-institution study, a recommendation could be added to conduct broader research that includes multiple universities with diverse student populations. This would provide a more comprehensive understanding of the effectiveness of the PBL combined with the OBE teaching course. Additionally, proposing longitudinal studies to track the long-term impact of the course on students' career progression and problem-solving ability in professional settings would add value to the recommendations.

1.4 Strengthened by suggesting collaboration with industry partners. This would involve inviting industry experts to co-develop parts of the curriculum or offer guest lectures that provide practical insights into new media marketing and planning. Such collaboration could also lead to the development of real-world projects that students could work on, thus bridging the gap between academic learning and industry expectations.

2. Further research Recommendation



2.1 To make the recommendations more impactful, it would be beneficial to include implications for educational policy. For instance, advocating for the integration of PBL and OBE frameworks into national educational standards for higher education courses in advertising and media studies could be suggested. This would not only elevate the teaching standards across institutions but also ensure that students across different regions benefit from a consistent and modern educational approach.

2.2 The development of a comprehensive evaluation framework that assesses both the process and outcomes of the PBL combined with the OBE teaching course. This framework could include criteria such as student engagement, the applicability of problem-solving ability in real-world scenarios, and student satisfaction. It should also suggest periodic updates based on the evaluation results to maintain the course's alignment with educational and industry trends.

References

- Cai, H., & Mao, P. (2009). Research on the Quality of Higher Education Services and Student Satisfaction. *Higher Education Research*, 67, 1-10.
- Campbell, D. T., & Stanley, J. (1963). *Experimental and quasi-experimental designs for research*. Chicago, IL: Rand McNally.
- Dewey, J. (1899). *The Middle Works of John Dewey (Vol. 1)*. Carbondale: Southern Illinois University Press.
- Du, Z. (2019). *Educational Psychology*. Beijing: People's Education Press.
- Fu, W. (2021). Research on enhancing the problem-solving ability of high school students in information technology courses by anchored instruction. Nanjing Normal University.
- Huan W. (2022). Network and New Media Advertising" at Southwest University: Establish engineering teaching content based on the OBE model. Fuzhou: Southwest University.
- Kun W. (2018). *Encourage students to ask questions by themselves*. Subject Education Press.
- Lin, W. (2020). Research on task-driven approach to promote students' ability to solve information technology problems. Northwest Normal University.
- Lin, Z., & Li, P. (2021). Survey on satisfaction of college students with teaching, course instructors, and curriculum. *Journal of Chongqing University (Social Sciences Edition)*, 2021, 119 - 124
- Rui, Z. (2019). Research on the application of Project-Based Learning in high school physics teaching. Hubei: Hubei University of Automotive Technology.
- Tyler, R.W. (1949). *Basic Principles of Curriculum and Instruction*. The University of Chicago Press.
- Wang, H., & Wu, Y. (2020). Problem Solving: Meaning, Process and Teaching Model. *Psychological Science*, 33 (1), 151 - 154.
- Xia, Z. (2019). Research on the development of primary school student's design thinking by project teaching mode. Shandong: Southwest Shandong Normal University.
- Xiao, Z. (2022). Curriculum reform of "Advertising Professional English" at Guangdong Peizheng College: The project "Teaching Innovation of Advertising Copywriting Courses under the Background of Chinese Communication Culture Dissemination". Guangdong: Guangdong Peizheng College.
- Yan, L. (2024). Research on Problem-Solving Teaching Strategy of Information Technology in Senior High School. Liaoning Normal University.
- Zhi, Z. (2023). Course reform of 'Signals and Systems' based on Outcome-Based Education teaching concept. *Journal of Shenyang Normal University (Natural Science Edition)*, 37 (3), 284 - 288.