THE DEVELOPMENT OF LEARNING ACHIEVEMENT IN REAL ESTATE MARKETING PLANNING COURSE USING FLIPPED CLASSROOM MODEL OF UNDERGRADUATE STUDENTS

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A thesis submitted in partial fulfillment of the requirements
for the Master of Education program in Curriculum and Instruction
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Thesis:	**The Development of Learning Achievement in Real Estate Marketing Planning Course Using Flipped Classroom Model for Undergraduate Students**
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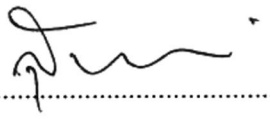

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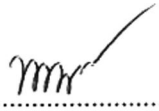

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ABSTRACT

The purposes of this study were 1) to develop of learning achievement in Real Estate Marketing Planning course using Flipped Classroom Model of undergraduate students and 2) to compare students' learning achievement before and after the implementation Flipped Classroom Model. The simple group of this study consisted of 30 samples from the third-year engineering management program undergrad education of Shanghai Sanda University. The research instruments included 1) lesson plans and 2) learning achievement test. The assessment questions aim to assess six sub-variables within the dependent variable including: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating. The data were analyzed by mean, standard deviation and t-test for dependent sample.

The results revealed the followings:

1. The development of learning achievement in Real Estate Marketing Planning course using Flipped Classroom Model which includes five steps: 1) Pre-lesson Preparation, 2) Identify the problem, 3) independent exploration, 4) collaborative communication, 5) Presentation of Results. This model can improve undergraduate students' learning achievement, achieving the research objectives.

2. The comparing students' learning achievement before and after teaching with the flipped classroom model, the average score of undergraduate students in pre-class

assessments was 60 of full score 100 , and in post-class assessments, it was 68. The post-class assessment scores were significantly higher than pre-class assessment scores at a statistical significance level of .01. This aligns with the research hypothesis.

Keywords: Flipped Classroom Model, Learning achievement, Undergraduate students

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As I embark on a new phase in my life, I will move forward with the encouragement and expectations of my teachers, classmates, friends, and family, striving relentlessly and ambitiously. I also sincerely wishing you health, peace, and happiness!

Shen Yan

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Introduction

Rationale

The context of global digital development, domestic university teaching was noticeably lagging. In university specialized courses, teaching was limited to imparting a large amount of theoretical knowledge while neglecting practical training. The dryness of theoretical knowledge may lead to students developing a weariness towards learning, making it even more difficult to enhance the effectiveness of course teaching. (Liu Na,2021) In recent years, with the increasing number of university graduates, the domestic employment situation has become increasingly severe, with many graduates facing the reality of 'graduation equals unemployment.' Graduates generally have poor practical skills and high expectations but low abilities, making it difficult for students to quickly adapt to corporate requirements. Therefore, the cultivation of students' comprehensive professional abilities should be emphasized during their university years. (Li Donghua, 2018) In the context of the national advocacy for strengthening school-enterprise cooperation, practical training, and new teaching models, it was particularly important to innovate and transform from the teaching level

The National Medium and Long-term Education Reform and Development Plan Outline (2010 - 2020) proposes to regard reform and innovation as a powerful driving force for educational development. For a long time, China's higher education specialized teaching has continued the education characteristic of knowledge impartation from middle and high school stages, which was specifically reflected in the vocational education model of theory first and practical training later. In this teaching environment dominated by one-way lecturing by teachers, students often do not actively think about the content of the class, and they must synchronously receive knowledge in the classroom. Teachers were unable to cater to students of varying levels, thus easily causing differences in students' absorption and understanding. In practical training, more and more serious problems often emerge, such as the rigid

application of theory to textbook templates, lack of comprehensive thinking in teamwork, etc. Therefore, (Lin et al., 2022) current higher education was shifting from a teacher-centered to a student-centered approach, moving from the dual main' learning model (i.e., teacher-led, student-focused) to the mainstream direction of specialized teaching. Bond (2020) around this transformation, higher education specialized classroom teaching will also present a flipped situation.

The existing real estate marketing planning course teaching, the continuation of the junior high school level "knowledge transfer-oriented" educational features, most of them were still confined to the traditional teaching model, ignoring the teaching mode and the sense of student experience and participation. In this one-way teacher-based teaching environment, students often do not take the initiative to think about the content of the class, and students must be synchronized in the classroom to receive knowledge. Teachers can't take into account the various levels of students, so it was easy to cause differences in the degree of absorption and understanding of students, in the process of practical training will often reveal more serious problems, such as the application of theory stuck in the textbook template, the lack of teamwork The teamwork lacks integrated thinking and so on (Wang Yatan, 2021).Therefore, Akçayır (2018) the real estate marketing planning course teaching mode needs to be improved to cultivate students' professional comprehensive ability and realize the effective connection between school and enterprise

Real estate marketing planning was a professional core course for students of marketing and planning real estate marketing direction. The course covers a wide range of knowledge, deep theoretical and practical, and most of the knowledge and skills need students in more case studies, practice, induction, and summary to be thoroughly familiar with mastery. In the current higher education classroom teaching, real estate marketing planning mainly has two ways: one was to carry out theoretical learning and classwork check in a step-by-step manner, and the second was to teach first and then practice. The former was a passive way of learning, in which students learn quickly but forget more rapidly, which was not conducive to mastering professional knowledge and cultivating professional ability (Wu Tao & Yang Meiling, 2019). The latter provides students with the opportunity to practice. Still, when the explanation was more

extensive and complex, it was easy to have the problem that the training steps were not standardized or even out of control. Therefore, to strengthen students' project practical training learning and make the Real Estate Marketing Planning course a professional course for cultivating students' professional competence and literacy in marketing planning, flipping classroom teaching and practicing constructivist views and teaching psychology theories were of great significance for front-line teachers to understand and apply the concept of higher education teaching reform and solve the outstanding problems in current teaching.

Learning achievement in Real Estate Marketing Planning course is a direct indicator of a student's grasp of course knowledge and skill level (Lin Xiaoyuan, 2022). Good grades indicate that the student has understood the fundamental concepts of the real estate market, marketing strategies, and methods of plan formulation. Achieving high learning achievement usually means that the student has not just memorized information, but is able to deeply understand and apply the knowledge learned. In the practical environment of real estate marketing, this deep understanding and application ability are extremely valuable. Good Learning achievement can enhance a student's confidence and motivate them to continue striving in their learning and professional development. Achieving good grades in challenging courses like 'Real Estate Marketing and Planning' can significantly boost a student's sense of self-efficacy. Students who excel in this course are usually better prepared to enter the real estate marketing industry. This not only strengthens their professional abilities but also enhances their competitiveness in the job-seeking process. In summary, the importance of Learning achievement in the Real Estate Marketing and Planning course is not only reflected in the mastery of knowledge but also relates to the development of students' career readiness, confidence, critical thinking, and practical application skills, as well as future professional and academic development opportunities.

The teaching model that could increase learning achievement was flipped classroom. It established under the guidance of learner-centered education and constructivist theory, which has a relatively stable structure of teaching activities (Strelan & Palmer, 2020). However, different scholars have proposed different models of flipped classroom teaching in different disciplines and teaching conditions (Galindo-

Dominguez, 2021). The flipped classroom was a novel teaching tool in which the teacher uses technological resources to create instructional videos of what needs to be taught in the classroom and assign them to students before class. Students learn at their own pace according to their level, and the teacher and students discuss and solve problems with each other during class so that the teacher was no longer just the lecturer of knowledge and the sage on the podium. The teacher was no longer just the lecturer of knowledge and the sage on the podium; the students were no longer passive recipients of knowledge. The interaction and personalized contact time between students and teachers can be increased in this learning environment, which allows more students to individualize their learning and receive customized education (Hoshang, 2021). The difference from the traditional teaching model was that the flipped classroom will enable students to acquire knowledge through self-study by selecting appropriate and personalized education according to their preferences before class and in style by enhancing students' interest in learning through mutual support teaching and learning with their peers to facilitate the absorption and internalization of knowledge. Through mutual support and cooperation between students, cooperative learning not only improves the passive teaching method of traditional classroom teaching but also enhances students' ability to think, learn cooperatively, and increase their interest in education.

The flipped classroom, the teaching philosophy of teachers has changed fundamentally: from "teaching to learn" to "learning to teach." Teachers no longer focus on what was taught in the textbook. They focus on what students were interested in, what problems they have, and what wereas they need to work on and improve. Such a teaching philosophy was also applied throughout the teaching activities. Before the lesson, we use pre-study and feedback to understand the problems in students' learning and prepare in a targeted way. During the class, more free discussion, group work, design of focus topics, and questions on wassues of interest were used to interact with students and guide them to take the initiative to identify problems, analyze them and find new ones, think about them, and solve them. The last part was to relate the knowledge learned to the actual situation, which translates the confusion of "knowledge can be learned but not used" in students' minds and improves students'

ability to apply their knowledge. The whole teaching activities were organized around the students, which genuinely reflects the guiding ideology of "student-centered."

The course Real Estate Marketing Planning, students were allowed to pre-study the relevant knowledge points before class. They were encouraged to speak up in style with appropriate cases to improve their expression ability and to understand their knowledge mastery. Secondly, by combining theoretical teaching with practical training, students have the opportunity to consolidate their knowledge again through mutual discussion between teachers and students, discuss with teachers what they do not understand, deepen their understanding of classroom knowledge, and improve their practical application ability through group activities and cooperative learning. Over time, students change from passively receiving knowledge to actively participating in learning activities, and at the same time, feel the joy of learning and truly become active investigators of learning.

In summary, this study integrates flipped classroom and practical training in the teaching of Real Estate Marketing Planning. UNESCO believes that the international trend of higher education was "practice-oriented" and encourages the further development of the critical role of practical training. Flipped classroom teaching provides rich learning resources for students' independent learning through micro-courses, and practical training teaching expands a new platform for students to practice theoretical knowledge. The flipped classroom teaching mode enhances the learning effect of college students in the Real Estate Marketing Planning course, was more conducive to carrying out the teaching practice of Real Estate Marketing Planning, exercises and cultivates students' marketing planning ability and collaboration ability, and was also of great significance to developing students' vocational ability.

Objective(s)

1. To develop of learning achievement in Real Estate Marketing Planning course using Flipped Classroom Model of undergraduate students.

2. To compare students' learning achievement before and after the implementation Flipped Classroom Model.

Research Hypothesis/Hypotheses

After the implementation based on Flipped Classroom Model, the students' learning achievement in Real Estate Marketing Planning course has obviously improved.

Scope of the Research

Population and the Sample Group

Population

There were 2 classes of 30 students each, totaling 60 third-year undergraduate students of Engineering Management Program of Shanghai Sanda University.

The Sample Group

Through cluster random sampling, 30 third-year of class 2 undergraduate students with mixed abilities (strong, medium, and weak) were from Engineering Management Program of Shanghai Shanda University.

The Variable

Independent Variable

Flipped Classroom Model

Variable

Learning achievement

Contents

The purposes of this study were to improve undergraduate students' learning achievement by using the Flipped Classroom Model in Real Estate Marketing Planning course. This course was divided into the following four learning units, total 12 hours:

1. unit 1: General Introduction to Real Estate Marketing and Planning (3 hours)
2. unit 2: Core Marketing Theory and Techniques (3 hours)
3. unit 3: Real Estate Full Planning (3 hours)
4. unit 4: Real Estate Marketing Promotion (3 hours)

Time

The study period from February to November 2023 was divided into the following phases:

1. Developed proposal 3 chapters and defensed in February 2023.

2. Modified and completed 1) the teaching plan of Real Estate Marketing Planning course based on Flipped Classroom Model and 2) the learning achievement assessment from June to August 2023.

3. Experimental studies were conducted in September 2023.

4. The formal research was conducted in October 2023.

5. Summarize the research in November 2023, complete the thesis and publish the paper.

Advantages

1. For students, in the discussion and interaction in small groups, knowledge was constructed independently in the flipped classroom, and important skills such as language expression, collaboration, analysis and inquiry were exercised, and students have a stronger sense of participation, achievement and pleasure in the learning process, and have a deeper understanding of theory and internalize their own knowledge system.

2. For teachers, the flipped classroom not only reverses the teaching sequence, but also flips the roles of teachers and students. Under the flipped classroom, student-centered teaching adapts to learning, teaching to help learning, and teaching to serve learning were its distinctive features, in order to improve teachers' ability to summarize knowledge points and grasp the curriculum, and help broaden teachers' teaching mindset.

3. For school, it can expand the ideas of classroom teaching reform and innovation in higher education institutions and promote higher education classroom teaching. The flipped classroom teaching mode has injected new vitality into the current teaching in higher education institutions.

Definition of Terms

Flipped Classroom Model: mean of Flipped classroom mode was a kind of teaching mode that breaks through the time and space limitations of traditional classroom teaching to achieve the purpose of improving students' interest in learning, enhancing teacher-student interaction and communication, and revitalizing the

classroom atmosphere, by releasing classroom time to gain a deeper understanding of the specific application of knowledge in practice, to achieve the improvement of teachers' performance of students, and then strengthen students' personalized learning, develop students' thinking, and cultivate students' learning ability, expression ability, and innovation ability. The following five teaching sessions were included:

Step 1 Pre-lesson Preparation

Teachers need to prepare teaching materials, such as instructional videos, learning materials, and online tests, covering key concepts and theories of the course. These resources should be posted on an online platform for students to study independently before class. Additionally, teachers should design some questions or tasks based on the teaching content and objectives to guide students in deeper thinking and communication during class discussions.

Step 2 Identify the problem

Based on the preparatory work, teachers should identify some key questions or tasks in the classroom to guide students in deep thinking and exploration. These questions or tasks could be errors found in online tests, problems encountered by students in their independent study, or issues raised by the teacher according to the teaching content and objectives. Teachers need to address doubts based on students' pre-class multimedia learning resources and the issues reflected in student-student and teacher-student interactions during class.

Step 3 Independent Exploration

Students should independently think and explore based on the questions or tasks posed by the teacher, as well as issues encountered during their pre-class self-study. During this process, students can independently consult relevant materials or conduct experiments and research to find answers and solve problems. Teachers guide students in in-depth personal research, applying learned knowledge to solve practical problems or engaging in innovative explorations.

Step 4 Cooperative Communication

After independent exploration, students should engage in cooperative communication, sharing their thoughts, exploratory results, and methods and ideas for solving problems. Teachers can organize students for group discussions or collective

seminars to facilitate mutual learning and exchange. When students encounter problems during discussions, teachers can provide timely help and guide students to clarify misunderstandings of knowledge. Group discussions or project collaboration deepens students' understanding and application of knowledge.

Step 5 Presentation of Results

Finally, students need to present the results of their independent exploration and cooperative communication for evaluation and feedback from teachers and other students. During this process, students can display their problem-solving methods, research reports, or experimental results, and share insights and learning experiences gained during the problem-solving process. In the presentation phase, students or groups can gain deeper understanding of the learning task through comments and evaluations from teachers and students.

Learning achievement: learning achievement typically refers to the level of knowledge displayed by students in academic or educational activities. This is commonly assessed through exams, assignments, projects, oral presentations, etc., and manifested in the form of scores or grades. By observing students' mastery of knowledge, their performance at different stages of learning can be directly reflected. According to the viewpoint put forth by Anderson, Lorin W., and David R. Krathwohl in 2001, learning achievement is essentially the cognitive learning of knowledge. Based on the revised version of Bloom's Taxonomy, they subdivided the cognitive learning of knowledge into six distinct levels: remembering, understanding, applying, analyzing, evaluating, and creating. These levels are conceptually independent, representing a cognitive process that ranges from simple to complex.

Undergraduate students: undergraduate student refers to a student who was receiving undergraduate education and pursuing a bachelor's degree at a university or other institution of higher education. Undergraduate education typically includes a variety of general education courses and professional courses, where students need to pass examinations and complete coursework to earn credits. In this study, the term undergraduate students refers to students who were in their third-year undergraduate students of Engineering Management Program of Shanghai Sanda University.

Research Framework

The conceptual framework of the study, the development of learning achievement in real estate marketing planning course using flipped classroom model of undergraduate students, was as follows:

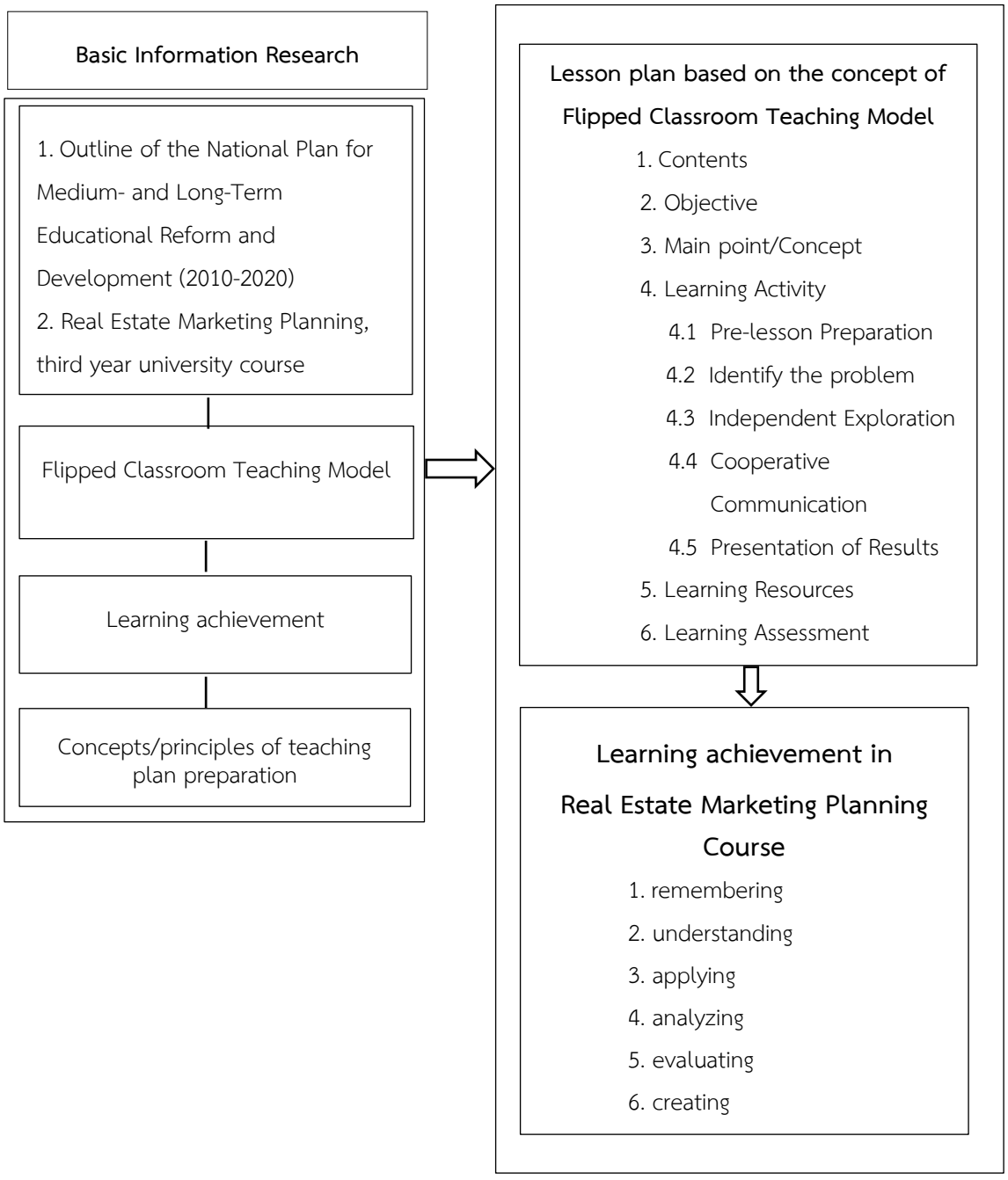

Figure 1.1 Research Framework

Chapter 2
Literature Review

This research, the development of learning achievement in Real Estate Marketing Planning course using Flipped classroom model of undergraduate students, the following literatures were studied:

1. Flipped classroom model
2. Learning achievement
3. Teaching of real estate marketing planning courses
4. Related research

The details were as follows:

Flipped classroom model

Definition of Flipped classroom model

Flipped classroom model was one of the famous teaching models. Many academics have given definitions about the Flipped classroom model as follows:

Akçayır (2018, p.334) present that the flipped or inverted classroom was a new and popular instructional model in which activities traditionally conducted in the classroom become home activities, and activities typically constituting homework become classroom activities. In the flipped classroom, the teacher helps the students instead of merely delivering information. In contrast, the students become responsible for their learning process and must govern their own learning pace.

Academy of Active Learning Arts and Sciences (2018) propose that the flipped approach was instructional model that inverts the traditional classroom model by introducing course concepts before class, allowing educators to use class time to guide each student through active, practical, innovative applications of the course principles.

Bond (2020) proposes that flipped learning was an approach that has great promise to bring technology more into the classroom, help develop students' digital competencies, increase higher-order thinking skills and active learning time, promote

problem-solving, teamwork and collaboration skills, and has the potential to enhance both parent and student engagement.

Strelan (2020) said that the flipped classroom was instructional model that reflects a "set of pedagogical approaches that (1) move most information transmission teaching out of class; (2) use class time for learning activities that are active and social; (3) require students to complete pre-and/or post-class activities to benefit from in-class work fully.

Lin et al. (2022) propose that the flipped classroom instructional model reverses in-class teaching with at-home learning activities, with students learning new instructional content on their own time by watching lecture videos that instructors either pre-record or select from online sources and then engaging in instructor-facilitated, student-centered learning activities such as collaborative learning activities and problem-solving learning activities in class to cultivate higher levels of cognitive learning.

In summary, Flipped classroom mode was a kind of teaching mode that breaks through the time and space limitations of traditional classroom teaching to achieve the purpose of improving students' interest in learning, enhancing teacher-student interaction and communication, and revitalizing the classroom atmosphere, by releasing classroom time to gain a deeper understanding of the specific application of knowledge in practice, to achieve the improvement of teachers' performance of students, and then strengthen students' personalized learning, develop students' thinking, and cultivate students' learning ability, expression ability, and innovation ability.

Principles of Flipped classroom model

Principles of Flipped classroom model were important because of being useful guidelines for teaching. There were many academics have given their views on the Principles of Flipped Classroom as follows:

Liu Na (2021, p.39) proposes the principles of flipped classroom teaching design: 1) Student-centered principle: In the flipped classroom teaching of Guide Business, the student-centered principle should be followed to create a learning context for students to learn professional knowledge and improve their business ability, so that

students have enough confidence and preparation to meet the challenges in practical work. 2) Principle of differentiated education: Multiple Intelligences theory points out that Individual differences exist objectively, and each person has a different way of combining intelligence. Teachers need to change the single teaching style, develop individual teaching plans based on students' learning styles, and adopt teaching strategies that were appropriate for students. In each stage of the flipped classroom, teachers can provide targeted instruction according to students' learning situation and progress, stimulate students' different potentials and intelligences, and optimize students' personalized learning styles. 3) Emphasis on the principle of combining with information technology: The flipped classroom was a new teaching model arising from the background of education informatization, using information technology as a medium to combine the elements involved in the subject curriculum to accomplish The flipped classroom was a new teaching model created in the context of information technology in education. In the Flipped classroom model, attention should be paid to the design of three aspects: learning resource platform, communication and interaction platform, and achievement display platform.

Chai Ruijuan (2021, p.25) proposes the principles of flipped classroom teaching design: 1) Systematic principle. Teaching design was a systematic project, which was composed of subsystems such as analysis of teaching objectives and teaching objects, selection of teaching contents and methods, and teaching evaluation, etc. The subsystems were relatively independent, but also interdependent and mutually constrained, forming an organic whole, and to grasp the systemic nature, it was necessary to consider the common role of each part. 2) Procedural principle. Teaching practice has a certain degree of procedural nature, so in the teaching design, it was necessary to consider the procedural nature and implement the steps in a step-by-step manner, etc. 3) The principle of feasibility. The teaching design must be operable and meet the subjective and objective conditions, and even at a certain time, necessary modifications should be made. 4) Feedback principle. The effect of the teaching design should be reflected by the results of practice, etc.

Cao Luning (2022, p.28) proposed that the principles of instructional design in the flipped classroom were the process of understanding students, clarifying teaching

objectives, studying teaching materials, and giving specific teaching methods. According to mastery learning theory and constructivist learning theory teaching practice, the following principles were proposed: 1) Systematic principle: curriculum design and implementation was a systematic process. Teaching content needs to be systematized by teaching videos before class, classroom exercises and discussions, and reflection after class; teaching design needs to be systematized by teaching objectives, teaching process, and teaching materials; teaching implementation needs to be systematized before class, during class, after class, and online and offline learning, and it was important to link all the links closely to form a whole. 2) Principle of openness: The biggest advantage of online teaching was that students in the learning The process does not have to be restricted by the venue, time and environment, and can choose the time of learning according to their actual situation, and learn more freely. The online classroom also provides students with a variety of learning resources, and students can use these learning resources to gain a deeper understanding of what they have learned and to promote their interactive inquiry and problem-solving skills. 3) The principle of interactivity: classroom learning was not an independent individual activity, but requires active interaction and communication between teachers and students. Interaction was mainly divided into two forms: online and offline. Online interaction was mainly based on the Wisdom Tree's Know to platform, which allows students and teachers to communicate and interact online. Offline interaction was the face-to-face communication and interaction between teachers and students in classroom teaching.

Tian Ke (2022, p.28) extracted three teaching principles of the flipped classroom in practice: 1) the principle of student-centeredness: first, the teacher provides elaborate learning materials online before and after the class, and students can complete pre-course pre-study and post-course review according to their actual situation, and students take the pace of learning into their own hands; second, the teacher was no longer the whole class "Third, the online feedback of learning effect before class, the discussion and communication during class and the online tutoring after class also strengthen the teacher's help and personalized tutoring for students, and the teacher; 2) The principle of effectiveness of classroom communication: the

inquiry-based classroom was one of the core parts of the flipped classroom, and the quality of the classroom arrangement directly affects students' enthusiasm, interest and learning effect. The design of the inquiry classroom should pay attention to several aspects: firstly, the more questions for inquiry exchange was not better, but the questions should be accurate and precise; secondly, the design of the questions should be hierarchical, and the inquiry exchange should be from shallow to deep, not confusing; again, the design of the questions should be in line with the law of students' cognitive development, and the questions should be designed according to the structure of knowledge and learners' original learning level, and at the same time, they should be able to guide students' thinking Finally, the more active the inquiry and exchange classroom was, the better, teachers should be good at controlling the rhythm of the classroom, and the "theory" should be "gain", so that students can really master the knowledge as the goal. 3) The principle of teaching process integrity: flipped Although some of the teaching steps were reversed, the flipped classroom still has to follow the principle of integrity. The principle of completeness requires that all parts of the teaching process should be inseparable and interlocked, and that the teaching objectives should be completed in a limited amount of time. Regardless of the teaching mode used, the teaching program should be designed in such a way that students' learning abilities and learning needs were fully considered.

To sum up, flipped classroom was a reversal of the traditional classroom teaching model, the reversal of the arrangement of knowledge transfer and knowledge internalization allows learners' independent learning, independent discussion, and teacher-student interaction to become the theme of the flipped classroom. Scholars at home and abroad, propose that the teaching principles of the flipped classroom were mainly: the principle of systematicity, the principle of openness, the principle of interactivity, the principle of feasibility, the principle of feedback, the principle of student-centeredness, the principle of The principle of differentiated education, the principle of combining with information technology, etc. How to reasonably and effectively improve the teaching design to guarantee the optimal effect of flipped classroom teaching has become a problem for front-line teachers to think about.

Objective of Flipped classroom model

Objective of Flipped classroom model were important. Only by clarifying the teaching objectives can the teaching process be more effective. There were many academics have given their views on the objective of Flipped Classroom as follows:

Huang Tingting (2019, p.11) proposes that through research intended to grasp the aesthetic characteristics and cognitive ability of junior high school students based on the requirements of art curriculum teaching, and explore how the flipped classroom can be used in the art classroom under the guidance of new standards and advanced educational concepts, with the aim of improving students' art appreciation and thus aesthetic ability. To solve the limitations of traditional classroom teaching on the cultivation of students' imaginative aesthetic ability and to explore the flipped classroom teaching strategies suitable for elementary students to learn art.

Liu Na (2021, p.15) proposes that by studying the teaching application of flipped classroom in middle-level "tour guide business", changing teachers' teaching concepts, changing traditional teaching methods and approaches, and improving teachers' information technology literacy; analyzing the subject characteristics, course nature and teaching objectives of middle-level "tour guide business", designing teaching links more suitable for middle-level students based on the principles of flipped classroom design, exploring students' the flipped classroom mode of independent learning, cooperative learning and inquiry learning was explored to achieve the purpose of integrating teachers into teaching and students into the classroom; the flipped classroom mode was used to explore the solution of vocational education reform and to realize the optimization of teaching of middle-level "Tour Guide Business", so as to achieve the purpose of improving teaching mode and enhancing teaching quality.

Wang Yatan (2021, p.12) proposes to investigate and analyze the current situation of teaching ancient poems in elementary school language, find out the problems in the current teaching of ancient poems, explore how to improve the traditional teaching method through flipped classroom, and hope to provide suggestions for front-line elementary school language teachers to teach ancient poems based on flipped classroom, improve the current way of teaching and learning, and enhance the teaching effect.

Ji Hui (2022, p.13) raised to combine online and offline through the Flipped classroom model to improve the current problems brought about by the traditional teaching model, such as students' learning procrastination, teaching content not attracting students' attention, and teacher-oriented student-assisted teaching. The purpose of the study was to provide students with innovative teaching methods and a platform for learning and communication, to truly realize the modern education concept of student-centered and lifelong development, to promote the diversification of students' learning styles, not to be limited to teachers' professors and simple online video learning, but to effectively combine the advantages of both online information technology and offline classroom teaching, and to improve new ideas and methods for vocational education teaching reform The new method was to improve new ideas and methods for vocational education teaching reform.

The purpose of the study by Chao Lu (2022, p.10) was to analyze whether flipped classroom teaching can enhance students' independent learning ability, class participation as well as knowledge mastery in this course by implementing flipped classroom teaching in the middle level "Internet Marketing Fundamentals" course. To explore how to introduce the flipped classroom teaching method into the middle-level "Internet Marketing Fundamentals" course in order to improve the learning efficiency of middle-level students' "Internet Marketing Fundamentals" course.

In summary, although flipped classroom was a new teaching mode, no matter what teaching mode, the real goal of teaching was to let students master the knowledge and learn to apply it, so as to "teach them to fish". The teaching methods and feedback before, during and after class were different from those in traditional classrooms, but no matter what changes occur, they cannot be separated from the essence of education. Research by scholars at home and abroad has shown that the purpose of the flipped classroom was to improve the current teaching and learning methods and enhance teaching effectiveness.

Teacher and student roles of Flipped classroom model

The Flipped classroom model, the roles of teachers and students have undergone significant changes, challenging traditional teaching methods. There were

many academics have given their views on the roles of teaching and students in Flipped Classroom as follows:

Li Donghua et al. (2018, p.64) argue that in the traditional teaching model, the teacher as the transmitter of knowledge often occupies the main position in the teaching process, and the students as passive recipients of knowledge, lacking the process of independent inquiry. The flipped classroom reverses the roles of teachers and students in teaching, with teachers playing the role of organizers and guides, and students becoming active absorbers and acquirers of knowledge, establishing the teaching concept of "student-led and teacher-led" and giving full play to students' initiative.

Tian Ke (2022, p.47) proposes that the flipped classroom can truly reflect the students' subjectivity. In traditional classrooms, students were passive recipients of knowledge, which does not reflect the students' main status, so students with low self-control often cannot concentrate on learning efficiently. In the flipped classroom, students can pause the lesson or multiply the speed according to their actual situation, which truly meets the needs of students at different levels and reflects the students' main position. In the class, students change from receivers and listeners to participants and speakers, and the inquiry learning in the class promotes "deep dialogue" between teachers and students, strengthening the one-on-one tutoring of teachers in the class and enabling teachers to focus on individual students. The inquiry process helps students understand the text at a deeper level, learn to analyze the text, and apply their learning when working on problems. The change in classroom roles inspires students to take the initiative to learn and share their expression, making the classroom atmosphere more dynamic and effective.

According to Chao Lu (2022, p.18), the essence of the flipped classroom was to reverse the roles of "imparting knowledge" and "absorbing knowledge", with the teacher changing from the "imparter" of knowledge to the "organizer" and the students changing to the "organizer" of knowledge. The teacher changes from a "transmitter" to an "organizer" of knowledge, and the students change from a "receiver" to an "inquirer" of knowledge, becoming the master of the learning process. To a certain extent, flipped classroom makes up for these shortcomings, making students the masters of learning,

freeing up more class time and giving teachers the opportunity to pay attention to more students. At the same time, the process of teacher-student interaction and communication also improves students' independent learning, communication and collaboration skills, and cultivates all aspects of their lives.

Kang (2022) said that flipped classroom teaching was not only about imparting knowledge, but also about "educating people". It was important to pay attention to students' emotional and psychological health and changes; to guide students to establish correct values and outlook on life, correct learning motivation and attitude, and to promote students' self-confidence and optimism. This will not only promote academic achievement, but also make students' personality sound. In addition, in flipped classroom teaching, diverse teaching methods and approaches were adopted to mobilize students' enthusiasm and initiative, so that students can become active learners and lovers of learning, thus ultimately promoting the effectiveness of flipped classroom teaching mode.

To sum up, the flipped classroom enriches the teacher's past classroom model, more so because of the fundamental change in the status of students and teachers in the flipped classroom model. The flipped classroom teacher becomes the guide and helper of the students, changing the teaching philosophy of the past, leaving the class time to the students; the students become the protagonists of learning, making them have a sense of responsibility and honor, and can improve each other through the process of mutual help and mutual teaching, mutual cooperation, etc., and then master the learning method, and apply the knowledge to life practice, so that the learning understanding will be deeper. Flipped classroom was one of the better ways to enhance students' initiative and master the way of learning.

Learning management process of Flipped classroom model

Learning management process of Flipped classroom model were important because of being useful guidelines for teaching. There were many academics have given their views on the learning management process of Flipped Classroom as follows:

Sun Yayun (2018, p.20) designed its Flipped classroom model by analyzing the theory and research related to flipped classroom and flipped classroom model, combined with the characteristics of experimental chemistry course. The experimental

chemistry Flipped classroom model mainly contains three stages: pre-class knowledge transfer, classroom knowledge internalization and post-class knowledge consolidation and improvement. 1) Students were guided by task sheets, combined with study plans and watching micro-video or consulting information 2) In the classroom, through answering questions, demonstrating students' skills and cooperating and exploring, they can internalize knowledge and even guide students to solve higher-level problems. 3) After the class, students can expand their learning by consulting literature, teachers and students can exchange their knowledge in the process of completing the report card. 4) After the class, students can review the literature to expand their learning, teachers and students can share their problems in completing the report card, and teachers and students can reflect on the three-dimensional objectives together to achieve simultaneous improvement. In conclusion, based on the Flipped classroom model, a higher learning platform should be built for students, so that the experimental chemistry course can provide more room for students to be independent and innovative. This enables students to spend more time in the flipped classroom analyzing, assessing, and creating at a higher level of the classroom rather than simply memorizing and understanding.

Cao Luning (2022, p.38) proposed this study to take the first lesson of Chapter 2 "Movement System" in the third edition of Anatomy of Movement (3rd edition) - "Overview of Movement System" as an example. 1) Pre-course implementation of the flipped classroom in sports anatomy: Before the start of teaching, the teacher has completed the creation of the sports anatomy course on the Wisdom Tree platform and released the corresponding learning resources, such as teaching videos, course materials, and independent learning task sheets. Students use cell phones, laptops and other mobile devices to carry out independent learning in advance according to the learning requirements on the task list, and record the difficulties and doubts they encounter in the process of self-learning in the task list and give feedback to the teacher. 2) Identify the problem: based on the preparatory work, teachers should identify some key questions or tasks in the classroom to guide students in deep thinking and exploration. These questions or tasks could be errors found in online tests, problems encountered by students in their independent study, or issues raised

by the teacher according to the teaching content and objectives. Teachers need to address doubts based on students' pre-class multimedia learning resources and the issues reflected in student-student and teacher-student interactions during class. 3) Implementation of post-class activities in the flipped classroom: After the class, students can log on to the Wisdom Tree "Know to" platform to review and consolidate the learning content. After the class, students can review and consolidate the learning contents, and also discuss online the questions raised by the teacher (to summarize and reflect on the learning contents and improve their independent thinking ability). Teachers need to reflect on students' learning and teaching effectiveness in order to improve and optimize their teaching design.

Rao Yangde and Deng Fuyu (2022, p.83) Deep learning perspective of flipped classroom teaching process design for general entrepreneurship course: 1) Pre-course preparation: teachers must clarify the course teaching objectives, teaching content before the course teaching begins, and determine the composition of teaching content according to the characteristics of the Flipped classroom model; teachers must also analyze the teaching priorities and difficulties according to the teaching content, prepare the lesson carefully, and create teaching; 2) offline classroom teaching: First, the teacher explains theoretical knowledge points. After the teacher finishes explaining, students individually or in groups use their cell phones to answer the questions of fill-in-the-blank, single choice, multiple choice and short answer designed by the teacher in advance through the digital online learning platform, and the multimedia screen automatically displays the students' answers, so that the teacher can understand the students' knowledge mastery and migration application, and on this basis can further comment and explain. Second, offline intensive training to learn the more subjective knowledge points. Each group learns in a collaborative way around the discussion (or practice) topics proposed by the teacher, allowing students' individuality to be fully demonstrated. After the discussion, the teacher randomly selects a group or several groups of group members to share the problems they encountered in the process of completing the discussion topic, the countermeasures to solve the problems and the gains, etc. Other students can add to them, so as to promote the internalization and migration of entrepreneurial knowledge and thus

enhance students' creative problem-solving ability. 3) On-line and off-line teaching feedback: After the above two teaching links were finished, the teacher constructs post-class teaching feedback according to each link of off-line teaching and After the above two teaching links were finished, the teacher constructs a post-course teaching feedback mechanism based on each link of offline teaching and teaching objectives. After the course, on the one hand, teachers summarize students' performance and problems in the classroom, make objective and fair evaluation of students according to the evaluation criteria and provide timely feedback; on the other hand, teachers upload post-class assignments through the digital online learning platform, students complete post-class assignments and upload them to the digital online learning platform, and teachers review and grade them online and provide feedback to students, so that students can further Review the course teaching knowledge theory and consolidate the teaching effect. 4) Cooperative Communication: after independent exploration, students should engage in cooperative communication, sharing their thoughts, exploratory results, and methods and ideas for solving problems. Teachers can organize students for group discussions or collective seminars to facilitate mutual learning and exchange. When students encounter problems during discussions, teachers can provide timely help and guide students to clarify misunderstandings of knowledge. Group discussions or project collaboration deepens students' understanding and application of knowledge. 5) Presentation of Results: students need to present the results of their independent exploration and cooperative communication for evaluation and feedback from teachers and other students. During this process, students can display their problem-solving methods, research reports, or experimental results, and share insights and learning experiences gained during the problem-solving process. In the presentation phase, students or groups can gain deeper understanding of the learning task through comments and evaluations from teachers and students.

Ji Hui (2022, p.32) elaborates the teaching design of three stages, i.e., before, during and after class, from several perspectives of teaching objectives, contents and processes. 1) In the pre-class stage, teachers need to collect materials related to teaching contents before class, and then put learning materials such as teaching

videos, PPT teaching courseware and task lists before class with the help of information platform, taking WeChat class group as an example, by posting self-study materials Students were informed of the classroom tasks and content by posting the self-study materials to the WeChat communication group. Before the class, students need to complete the teaching contents and homework tasks wassued by the teacher. 2) During the class, based on the weak independent learning ability of middle school students and the lack of solid basic knowledge, the teacher's tasks in this stage were divided into the first 30 minutes and the last 15 minutes. In the first 30 minutes of the course, the teacher will answer students' questions and guide them to discuss independently or in groups, and in the second 15 minutes of the course, the teacher will summarize the important and difficult points. In this stage of the lesson, the first 30 minutes were for showing the results of independent learning and asking the teacher for advice on any doubts or difficulties, while the second 15 minutes of the lesson were for deepening the understanding of what they have learned; 3) In the post-lesson stage, the teacher summarizes and reflects on the overall teaching design based on the students' homework and their feedback in class, and the students need to consolidate their classroom knowledge in the post-lesson stage. Practice.

Xiao Wenyu (2022, p.10) believes that flipped learning involves shifting lecture time to the pre-class phase, allowing students to conduct studies related to the course before class, thus providing more time for classroom practice. In the classroom, students come with questions to ask the teacher, who answers these questions on the spot, allowing students more time to practice under the teacher's guidance. Based on this, the researcher proposed a self-regulated flipped learning method to guide students in setting learning goals and support them in monitoring their learning status in five stages, namely goal setting, flipped learning (including pre-class video teaching and classroom discussion), task sharing, self-evaluation, and self-regulation feedback. In addition, an experiment was conducted in a professional training program to examine the effectiveness of the proposed method. The experimental results showed that the method significantly improved students' learning achievements, self-efficacy, self-regulation abilities, and critical thinking skills, which contributed to the improvement of their performance.

Table 2.1 The synthesis of the process of the Flipped classroom model

Author	Sun Yayun 2018	Cao Luning 2022	Rao Yangde and Deng Fuyu 2022	Ji Hui 2022	Xiao Wenyu 2022	This research Detail 2023
Step 1	Pre-class Knowledge Transfer	Before class: Independent study, record difficulties and doubts	Pre-class Preparation: Clarify the teaching objectives and key points of the course.	Pre-class Phase: Assign tasks and complete prepara-tory study	Goal Sett-ing	Pre-lesson Prepara-tion
Step 2	Classroom Knowledge Internaliza-tion: Answering Questions, Student Skill Demonstra-tion, Cooperative Inquiry	Identify the problem	Offline Classroom Teaching: Group Collaborati on and Communi-cation	Mid-Class Phase: Clarifying Doubts, Group Discussion, Extracting Key Difficult Points	Flip-ped Learn-ing (Include-ing Pre-class Video Teachi-ng and In-class Discus-sion)	Identi-fy the pro-blem

Table 2.1 The synthesis of the process of the flipped classroom model (continue)

Author	Sun Yayun 2018	Cao Luning 2022	Rao Yangde and Deng Fuyu 2022	Ji Hui 2022	Xiao Wenyu 2022	This research Detail 2023
Step 3	Post-Class Knowledge Consolidation and Enhancement: Extended Learning, Teacher-Student Interaction	After Class: Summary and Reflection	Online and Offline Teaching Feedback	Post-Class Phase: Summary and Reflection	Independent exploration	Independent exploration
Step 4			Collaborative communication		Self-evaluation	Collaborative communication
Step 5			Presentation of Results		Self-regulation Feedback	Presentation of Results

In summary, considering the perspectives of experts and scholars both domestically and internationally, the teaching process of the flipped classroom can be summarized into five steps: 1) Pre-lesson Preparation: teachers need to prepare teaching materials, such as instructional videos, learning materials, and online tests, covering key concepts and theories of the course. These resources should be posted on an online platform for students to study independently before class. Additionally, teachers should design some questions or tasks based on the teaching content and

objectives to guide students in deeper thinking and communication during class discussions. 2) Identify the problem: based on the preparatory work, teachers should identify some key questions or tasks in the classroom to guide students in deep thinking and exploration. These questions or tasks could be errors found in online tests, problems encountered by students in their independent study, or issues raised by the teacher according to the teaching content and objectives. Teachers need to address doubts based on students' pre-class multimedia learning resources and the issues reflected in student-student and teacher-student interactions during class. 3) Independent Exploration: students should independently think and explore based on the questions or tasks posed by the teacher, as well as issues encountered during their pre-class self-study. During this process, students can independently consult relevant materials or conduct experiments and research to find answers and solve problems. Teachers guide students in in-depth personal research, applying learned knowledge to solve practical problems or engaging in innovative explorations. 4) Cooperative Communication: after independent exploration, students should engage in cooperative communication, sharing their thoughts, exploratory results, and methods and ideas for solving problems. Teachers can organize students for group discussions or collective seminars to facilitate mutual learning and exchange. When students encounter problems during discussions, teachers can provide timely help and guide students to clarify misunderstandings of knowledge. Group discussions or project collaboration deepens students' understanding and application of knowledge. 5) Presentation of Results: students need to present the results of their independent exploration and cooperative communication for evaluation and feedback from teachers and other students. During this process, students can display their problem-solving methods, research reports, or experimental results, and share insights and learning experiences gained during the problem-solving process. In the presentation phase, students or groups can gain deeper understanding of the learning task through comments and evaluations from teachers and students.

Table 2.2 Detailed Interpretation of Flipped classroom model

Teaching link	Teaching task	Teaching strategy
Pre-lesson Preparation	Teachers need to prepare basic teaching materials such as video lectures, reading materials, or interactive courseware, which should cover the key concepts and theories of the course for students to study on their own before class.	Select or create high-quality learning resources, ensuring they were both engaging and easy to understand. Interest and participation among students can be increased through multimedia content and interactive activities.
Identify the problem	In the classroom, teachers need to guide students in discussing any questions and difficulties they encountered in their pre-class studies, helping students clarify the key points of learning.	Use guiding questions to stimulate discussion and encourage students to actively raise questions. Employ methods like group discussions and mind mapping to help students organize their thoughts and understand and deepen the content learned before class.
independent exploration	Teachers should guide students in conducting in-depth personal research, encouraging them to apply their learned knowledge to solve real-world problems or engage in innovative exploration.	Provide appropriate resources and tools, such as online databases, experimental materials, etc. Regularly communicate with students to understand their progress and provide personalized guidance and feedback.

Table 2.2 Detailed Interpretation of Flipped classroom model (continue)

Teaching link	Teaching task	Teaching strategy
collaborative communication	Teachers facilitate communication and collaboration among students, deepening their understanding and application of knowledge through group discussions or project collaboration.	Organize group activities, ensuring that each group member has the opportunity to contribute and learn. Utilize peer evaluation and group discussions to foster communication and reflection among students.
Presentation of Results	Have students present their learning outcomes, such as project reports, presentations, or experimental results, as a means to assess their learning effectiveness.	Offer a variety of presentation methods, allowing students to choose the form of expression that best suits them. Evaluate and provide feedback on student presentations, focusing on their depth of understanding, innovative thinking, and expressive abilities.

Advantages of Flipped classroom model

The Flipped classroom model, by reshaping the traditional classroom structure, offers a variety of opportunities, providing students with a more dynamic and participatory learning environment, and has a profound impact on the education system and learning methods. There were many academics have given their views on the advantages of Flipped Classroom as follows:

Akçayır, G. (2018, p.343) find that the most frequently reported advantage of the flipped classroom was the improvement of student learning performance, but, the majority of these were related to out-of-class activities, such as much said inadequate student preparation before class.

Lv Qinyun and Gao Kun (2020, p.50) addressed the problems of poor learning outcomes of higher vocational students in the implementation of flipped classroom

teaching due to formal self-study before class, weak awareness of the leading status of learning in class, and perfunctory extended education after class, and proposed targeted improvement strategies: designing and producing online course resources and pre-study courseware according to the knowledge tree structure, adjusting the types of self-test questions, combining attention curve and pyramid learning theory in class to implement teaching, hierarchically designing post-class exercises, and introducing Cornell's note-taking method.

Hoshang et al. (2021, p.413) find that students and educators were aware of flipped classrooms but more training in the tools and concepts of the flipped classroom was required, flipped classrooms can bring enormous benefits to students, institutions and educators.

Wagner and Urhahne (2021) find that at-risk, average and excellent students do not benefit from flipped or video-based instruction to a large extent, while independent and confident students could achieve higher learning gains.

Galindo-Dominguez (2021, p.44) find that flipped classroom methodology was more effective than other methodologies in terms of learning achievement, in secondary and higher education, and it could be more beneficial than other methodologies in other constructs as motivation, self-efficacy, cooperativeness and engagement, among others.

In summary, many scholars agree that the flipped classroom has many advantages over the traditional classroom , e.g., enhanced learning motivation leads to greater student confidence, engagement, and more positive attitudes. Some potential challenges need to be addressed for the effective implementation of flipped classrooms. First, since the quality of videos directly/indirectly impacts flipped learning, instructors should pay more attention to the quality of instructional videos while designing the flipped classroom. Second, it would be better if instructors could provide more interaction/communication tools to help students to obtain feedback/help when they were doing tasks/homework outside the class. Finally, since technology competency emerged as a challenge, instructors need to examine the technology availability and competency of students before implementing the flipped model. Future research on the effectiveness of flipped classroom may also adopt person-

centered approaches in order to investigate how, to what extent and under which conditions converted and video-based instruction works for individual students.

Theoretical Foundations of Flipped classroom model

Theoretical Foundations of Flipped classroom model were important because of being useful guidelines for teaching. There were many academics have given their views on the theoretical foundations of Flipped Classroom as follows:

Bloom's mastery learning theory

Qiao Guijuan and Li Nannan (2018, p.5) propose three core elements of mastery learning: the pedagogical concept of ensuring that "everyone can learn"; the pedagogical goal of achieving "teaching for mastery"; and the external environment of creating a climate for mastery. "The mastery learning theory was the core of Bloom's theoretical system, and its idea was a rebellion against the traditional view of students; traditional teaching habits use the standard curve to describe students' performance and believe that generally, one-third of students were excellent students with high intelligence and mastery, and one-third of students were unqualified students. One-third of the students were latecomers with substandard grades, and the remaining one-third were intermediate students with average rates.

Tang, J. (2019, p.7) summarizes several critical points of mastery learning: first, the prerequisite presupposition of mastery learning; second, the classification of teaching objectives; third, the school learning theory of mastery learning; and fourth, the formative assessment method of mastery learning.

According to Jinying Li (2021, p.11), mastery learning theory was that students can adjust their learning schedule according to their mastery in the process of mastering knowledge, thus making more diversified requirements for individual learning time; in the learning process, learners should have the initial learning foundation and ability, teachers can supplement their knowledge through guided learning, and learners should be aware of what they should learn before learning. The essence of mastery learning theory was that group teaching was supplemented by frequent feedback and individualized corrective help required by each student, and the flipped classroom was a teaching model conducted under mastery learning theory.

Zhang Xuan (2022, p.5) proposed that "mastery learning theory" was the theoretical basis of the flipped classroom, and the American educator Bloom first proposed the concept of mastery learning theory, arguing that with sufficient time and good lectures, most students can master the knowledge content of teaching; the difference of students' learning ability was not a factor affecting the proficiency of knowledge. factor of knowledge proficiency and the degree of knowledge mastery depends mainly on the amount of time spent; the role played by teachers in this theory has two main roles: one was to find the learning time for different students' specific needs, and the other was to find the way for students to spend the time they need.

According to Mao (2022, p.17), the core idea of "mastery learning" was to teach and learn around "mastery", to establish the teaching concept that all people can learn, and to achieve the teaching goal of "teaching for mastery" and "teaching for mastery". The core idea of "mastery learning" was to teach and learn around "mastery", to establish a pedagogical view that all people can learn, to achieve the teaching goal of "teaching for mastery" and the external environment of "learning for mastery", and to achieve a dynamic balance between teaching and learning.

In summary, the core concept of Bloom's Mastery Learning Theory was that every student can achieve a high level of mastery in learning objectives under appropriate teaching conditions. The role of the teacher was that of a guide and assistant, who should adjust teaching strategies according to the progress and needs of students. This teaching approach encourages monitoring students' learning progress through formative assessments and helps students overcome learning difficulties with feedback and additional guidance. Bloom's Mastery Learning Theory emphasizes personalized teaching, formative assessment, and comprehensive educational objectives, aiming to help each student reach their maximum potential.

Constructivist theory

Piaget (1981, p.16) argues that the structure of cognition was neither performed in objects, which were always assimilated into those logical-mathematical frameworks that transcend them; nor was it performed in subjects that must be constantly reorganized; the acquisition of cognition must therefore be described in terms of a

theory that closely connected theory, that was, every structure was the result of psychogenesis, which was the transition from a more elementary structure to a less elementary (or more complex) one.

Lulu Guo (2020, p.2) concludes that the constructivist view of students believes that students have subjectivity in the learning process and that their brains were equipped with certain life experiences and cognitive abilities before they enter the classroom. When they encounter difficulties, they can also reason and analyze with the experience and cognition that their brains possess, and internalize the original knowledge with the new knowledge.

Li Jinying (2021, p.11) proposes that constructivist teaching design was student-centered and problem-solving oriented, avoiding one-way input; constructivism emphasizes teacher-student participation in the teaching process and two-way interaction in the learning process. In general, constructivist learning theory was different from traditional one-way indoctrination learning but becomes two-way interactive learning, where the teacher was no longer the protagonist of learning activities, but the students become the center of learning and adopt diversified forms of learning knowledge.

Liffey (2022, p.11) Constructivist learning theory has its roots in cognitive theory, and its first proponent was the Swiss psychologist Piaget. "Context," "collaboration," "conversation," and "meaning construction" were the four primary elements and attributes of constructivist learning theory. The model was centered on "teaching context creation", "learning resource design", and "learning strategy design"; from the creation of teaching context before class, group collaboration during course, and independent learning after class. Students learn independently after class; not only emphasize the subjectivity of students but also focus on the guiding role of teachers, who play the role of guide, organizer and helper in the whole learning process; students do not learn by being but by actively discovering problems and constructing knowledge.

According to Wang Keying (2022, p.16), constructivism was a trend of learning theory that emerged in the mid-1980s. Constructivism emphasizes that students actively construct new knowledge, and socially interact in learning and

communication, and teaching should give students specific contexts. Constructivism holds that new knowledge can only be constructed by learners themselves. This theory requires teachers to create contexts and provide appropriate guidance and assistance to facilitate students' own meaningful construction of new knowledge, which was the same as the learner-centered idea in the flipped classroom.

Zeng Qingling (2022, p.20) proposed that constructivism considers learning as a process of knowledge self-construction rather than passive filler learning; a student-centered and student-led learning environment, including teacher-supported independent and cooperative learning; using problems such as cases or real-life conflicts as the core power source of research and emphasizing the need for the wassues to unfold in practical situations; making students aware of the complexity of the learning task, providing learning resources, cognitive tools, and assistance. Rather than overly detailed baseline-referenced assessments, the focus should be on holistic non-quantitative evaluations; design a variety of self-study strategies based on individual student differences to enable students to learn the topic successfully.

To summary, constructivism emphasizes that students do not passively receive information but actively select and process external communication, and make connections with the information already in their brains to construct, adjust and improve the knowledge system. Therefore, the students' subjectivity and initiative in the acquisition process. Constructivist ideas provide the theoretical guidance for the flipped classroom model, in which students were the classroom subjects, and teachers provide materials and create contexts to help them learn independently and collaboratively to achieve meaningful construction of knowledge.

Learning achievement

Learning achievement typically refers to the level of knowledge displayed by students in academic or educational activities. This is often assessed through exams, assignments, projects, oral presentations, etc., and is reflected in the form of scores or grades. Learning achievement not only reflects a student's understanding and mastery of a specific subject, but may also include their analytical abilities, creativity, and problem-solving skills. Additionally, academic performance may also involve the

student's engagement, classroom performance, and grasp of the learning material. In different educational systems and schools, the criteria and methods for assessing learning achievement may vary. Many scholars' research on learning achievement is as belows:

Definition of Learning achievement

Learning achievement typically refers to the level of knowledge displayed by students in academic or educational activities. It is usually measured through exams, tests, and other assessment methods. Many academics have given definitions about the learning achievement as follows:

According to Lorin W. and David R. Krathwohl (2001), learning achievement refers to the analysis of examination results, mainly assessing students' understanding and application of course knowledge. Based on the revised version of Bloom's Taxonomy, knowledge encompasses six levels. Each level is conceptually distinct. These six levels are: remembering, understanding, applying, analyzing, avaluating, and creating.

According to Baofang Zhang (2019) in her study, learning achievement was defined as the various knowledge and abilities (such as innovation and practice, interpersonal facilitation skills, and the combination of various skills accumulated in career planning) acquired by college students during their college life.

Li Yifan (2020, p.18) argues that learning achievement was learners' achievement in academics, refers to the knowledge and skills that students have acquired in a subject werea through schooling. It was reflected as the result of an individual's academic performance and can be extended to understand the learner's learning purpose. Learning achievement was one of the most important indicators of a student's academic success. Generally, teachers examine students' learning achievement through tests and ongoing assessments. However, for procedural knowledge, learning achievement can be measured through learning achievement indices without relying on the scores of continuous assessment. Based on this, learning achievement in this study refers to the results achieved by learners in the formal assessment process, such as test scores.

Huang Shao-Lan (2021, p.17) argues that from a pedagogical perspective, learning achievement refers to the corresponding educational rewards with grade differences that students receive by being assessed on academic standards, usually by academic performance on examinations. Learning achievement was considered as an important indicator of educational quality because of its properties such as easy measurement and collection of student learning achievement. Scholars have also mainly selected indicators such as mathematics achievement, language achievement, English achievement, examination pass rate and promotion rate to measure students' learning achievement. A literature review reveals that student learning achievement was only a part of student academic success, which should also include non-cognitive abilities and physical and mental health that affect students.

Wenyan Gao (2021, p.37) believes that learning achievement was an important way to measure the quality of education, and the current academic community has different definitions of the concept of learning achievement. Academic, as explained in the Chinese Dictionary, was the study of homework and assignments, generally referring to assignments in a particular subject. Words that go with academic were, first, grades and, second, achievement. Achievement refers to a result, in the broad sense of speaking of the result of a test of a certain ability, and in the narrow sense of referring to the score of an examination. Achievement, on the other hand, generally includes the meaning of a grade, but also refers more to the results achieved at a certain stage. In the field of education, learning achievement focuses more on the score obtained through learning, which was a static result, while learning achievement focuses more on the knowledge, skills, abilities, and qualities acquired in the process of learning and practicing.

Lin Xiaoyuan (2022, p.13) argues that researchers currently do not agree on the definition of the concept of learning achievement, but basically define learning achievement around two elements: knowledge and ability. On the one hand, the view was that learning achievement was a reflection of students' learning outcomes, i.e., academic performance; on the other hand, there was more agreement on defining the concept of learning achievement as students' understanding and mastery of knowledge and skills, as well as the improvement of overall quality during their studies.

Most studies also agree with learning achievement as a criterion for evaluating students' learning achievement, and this study adopts a narrow definition of learning achievement, which was academic performance, according to the need.

Ma Lili (2022, p.59) considers that learning achievement was as the knowledge and skills that students have acquired in school, through the study of certain courses and materials, usually represented by school test scores or by the scores obtained on academic tests. In this paper, learning achievement was defined in terms of students' performance on regular assessment tests within school as operational.

In summary, learning achievement typically refers to the level of knowledge displayed by students in academic or educational activities. This is commonly assessed through exams, assignments, projects, oral presentations, etc., and manifested in the form of scores or grades. By observing students' mastery of knowledge, their performance at different stages of learning can be directly reflected. According to the viewpoint put forth by Anderson, Lorin W., and David R. Krathwohl in 2001, learning achievement is essentially the cognitive learning of knowledge. Based on the revised version of Bloom's Taxonomy, they subdivided the cognitive learning of knowledge into six distinct levels: remembering, understanding, applying, analyzing, evaluating, and creating. These levels are conceptually independent, representing a cognitive process that ranges from simple to complex.

Influencing factors of Learning achievement

Learning achievement is a complex phenomenon, influenced by a multitude of factors related to the individual, environment, and society. Understanding these factors and specifically addressing them can help improve Learning achievement. Many academics have given definitions about the Influencing Factors of Learning achievement as follows:

Tokan et al. (2019, p.1) examined the direct effects of intrinsic and extrinsic motivation on learning behavior; the direct effects of intrinsic and extrinsic motivation and learning behavior on academic performance; the indirect effects of intrinsic and extrinsic motivation from learning behavior to academic performance. and the effect of intrinsic and extrinsic motivation and learning behavior on the academic performance of biology education students in FKIP Undana; the results showed that

intrinsic motivation has a direct effect on learning behavior and both directly affect academic performance; and intrinsic and extrinsic motivation and learning behavior together affect the academic performance of biology education students.

Yu et al. argued (2020) that motivation and learning engagement have a positive effect on learning achievement,, and the strength of motivation can influence the level of learning engagement, which in turn affects students' learning achievement.

Zheng et al. (2020, p.1) found that the flipped classroom approach had a moderate effect size on learning achievement, and motivation, and also analyzed the effect size of 12 moderating factors, including sample level, sample size, learning domain, flipped classroom model, study design, intervention duration, classroom approach, sample werea, pre-class and face-to-face interaction, pre-class tools, and pre-class resources; the results indicated that sample size, intervention duration, and sample werea had a significant moderating effect on effect size.

Wilson (2020) found that implementing inquiry-based learning had a positive direct relationship with student achievement and that planning and developing inquiry-based learning lessons can be time-consuming and resource-limited; however, students can make direct connections and experience deeper learning through hands-on and experiential learning, which can have positive benefits for student achievement, knowledge retention, and retention.

Tang Yipeng et al. (2020, p.93) proposed three strategies for learning, namely cognitive, metacognitive, and exploratory, and found through their research that students' learning achievement, improved more significantly when cognitive strategies were used. The paper also suggests that teachers should design instruction according to students' actual level and receptivity, and in terms of teaching methods, students' independent learning skills can be developed through participatory teaching and guided exploration to increase and improve students' academic performance. In terms of teaching evaluation, teachers' assessment and evaluation mechanisms can be improved by referring to and learning from international education development models in order to improve the academic performance of primary and secondary school students.

Aslan (2021) investigated the effects of first aid training using a problem-based learning approach in a live online classroom on students' academic performance, problem-solving skills, communication skills, and interaction skills; a quasi-experimental design with a pre-test and post-test was used for the quantitative aspects of the study, while the live online classroom in the experimental group was conducted through a problem-based learning (PBL) approach Both groups used the Zoom application in the live online class, and the results showed that students who took the live online class using the PBL method had higher academic performance, problem-solving skills, and interaction in the live online class than those who took the live online class using the instructor-based method, and there was no significant difference between the two groups in terms of communication There was no significant difference in communication skills between the two groups.

Hafidz et al. (2022, p.304) studied the effect of learning style and motivation on students' achievement with a quantitative post hoc method. The respondents of this study were 84 students and the results of the study were as follows. 1) Learning style had a positive and significant effect on learning achievement; 2) motivation had a positive and significant effect on learning achievement; 3) learning style and motivation together affected students academic performance was 10.2% and the percentage influenced by the extraneous variables in this study was 89.8%.

In summary, it was clear from the above studies that students' academic performance was influenced by their own motivation and effort, as well as by teachers' classroom teaching methods, such as problem-based learning, flipped classrooms, group work, class size, and so on. Appropriate learning methods can have a significant impact on academic performance. When the teaching environment, instructional arrangements, and teaching strategies match students' learning styles, they can improve students' attention and learning ability, increase their learning efficiency, improve their enthusiasm and academic performance, and make it easy for them to succeed.

Assessment of Learning achievement

The assessment of learning achievement is a multidimensional and comprehensive process, involving a variety of evaluation methods and standards. Many academics have given the following views on the evaluation of Learning achievement as follows:

Bloom (1956) initially proposed the cognitive domain taxonomy, dividing cognitive skills into six levels: Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation. He believed these levels reflect the depth of learners' knowledge, from basic memory to advanced evaluation and creation, and are also methods for assessing learning achievement.

Wang Jinying and Guo Shuping (1998, p.46) "Learning achievement assessment" was a kind of comprehensive assessment. According to Wang Jinying, learning achievement, evaluation was a comprehensive evaluation of learning process and results, and it was a "comprehensive" evaluation, which was different from the traditional unidimensional evaluation of learning achievement. According to Wang Jingying, the comprehensive evaluation of students includes the value judgment of the actual development level of students' morality, knowledge, skills, physical fitness, and social adaptability.

Anderson (2001), one of the main authors of the revised version of Bloom's taxonomy, revised the original model, changing the names and order of the levels, and renamed them as Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating. Anderson emphasized that the revised taxonomy highlights the importance of creativity and higher-order thinking skills, and these levels help to more accurately assess students' cognitive abilities and learning achievement. His definitions of new terms are: 1) Remembering: Retrieving, recognizing, and recalling relevant knowledge from long-term memory. 2) Understanding: Constructing meaning from oral, written, and graphic messages through interpreting, exemplifying, classifying, summarizing, inferring, comparing, and explaining. 3) Applying: Carrying out or using a procedure through executing or implementing. 4) Analyzing: Breaking material into constituent parts, determining how the parts relate to each other and to an overall structure or purpose, methods include differentiating, organizing, and attributing. 5) Evaluating: Making judgments based on criteria and standards through checking and critiquing.

6) Creating: Putting elements together to form a coherent or functional whole; reorganizing elements into a new pattern or structure through generating, planning, or producing.

Zheng Shujie et al. (2003, p.45) used standardized achievement tests to measure learning achievement. This was also a more commonly used measure in primary and secondary school groups. Since learning achievement, was a continuous learning behavior after the previous analysis, it was measured by the test score scores of a teaching period or semester, and Zheng Shujie has used this measure to study peer groups on children and adolescents' learning achievement.

Wen, Chao, et al. (2010, p.26) used overall grade point average to measure learning achievement,. Traditional learning achievement, measures tend to be "standardized scores", but with more precision and objectivity, the use of overall grade point average has emerged as a measure of learning achievement,. Wen Chao used this method to study the relationship between gratitude and learning achievement, of junior high school students.

Li Xiangyin et al. (2016, p.80) argued that interpersonal facilitation, learning cognitive skills, self-management skills, and communication skills were used as dimensions to measure learning achievement. Subjective ratings were made based on their own academic performance. The specific measurement was in the form of a questionnaire to obtain feedback on learning achievement, in the form of student self-assessment. Different researchers have developed corresponding questionnaires from different dimensions. Yang Na studied 500 subjects and revised the learning achievement, Measurement Scale, which contains four subscales: learning cognitive ability, communication ability, self-management ability, and interpersonal facilitation with good reliability.

Zhang Tongzhen (2019, p.17) learning achievement, assessment was an evaluation of students' learning processes and learning outcomes in the context of engaging in academic activities. Because learning achievement, assessment includes the evaluation of the learning process, learning achievement, assessment was an assessment with the characteristics of generativity, dynamism, multi-deformation, and stage.

Chen Yumei (2022, p.15) learning achievement, assessment refers to the assessment of learning results achieved in many aspects such as students' mathematical knowledge and skills, mathematical ability, personality such as interests, attitudes and habits, as well as good moral and scientific worldview through tests and evaluations. Based on the traditional understanding of learning achievement, evaluation and its connotation, and in view of the difficulty of evaluating students' interests, attitudes and other personality aspects, theoretical learning achievement, evaluation in this paper refers to measuring students' learning results in knowledge, skills and mathematical ability by combining quantitative and qualitative methods based on the theoretical learning achievement, evaluation model in this study, which was a kind of stage evaluation, mainly using learning achievement, to portray.

In summary, learning achievement is a comprehensive evaluation of the learning process and outcomes, measured through a combination of quantitative and qualitative methods to assess students' learning results at the knowledge level. It is a periodic assessment, primarily evaluated using scores. The criteria for measuring learning achievement mainly include: exam and test scores, coursework and projects, oral reports and presentations, classroom participation and performance, group work and collaborative projects, creativity and innovation. These criteria may vary according to different educational systems, schools, and courses. Teachers and educational institutions often combine multiple methods to comprehensively assess students' learning achievement. The author's research on learning achievement assessment mainly relies on the revised version of Bloom's Taxonomy, which subdivides cognitive learning of knowledge into six different levels for assessment, namely: remembering, understanding, applying, analyzing, evaluating, and creating.

Teaching of Real Estate Marketing Planning courses

As China's economy enters a new normal, the real estate industry has transitioned from its golden age to a silver age, changing the industry's talent needs and intensifying competition for skilled professionals. The current teaching of the "Real Estate Marketing Planning" course mostly remains grounded in traditional pedagogical thinking, focusing on core knowledge output such as product, price, promotion, and

distribution theories, while neglecting the specific needs of businesses as a third-party participant in talent development. As a vital employment position in the real estate industry, marketing planning plays a significant role in helping enterprises win in this competitive silver age, becoming one of the hotspots for job applications in real estate (according to a 2015 employment report from Zhaopin for the real estate industry, marketing positions accounted for 11.4%). The "Real Estate Marketing Planning" course primarily trains talent for real estate marketing positions. It needs to adapt its talent training approach to meet the actual needs of the real estate industry and reform its training objectives, teaching design, content, methodology, and assessment to enhance graduates' professional competitiveness.

Teaching Philosophy

During the "13th Five-Year Plan" period, China's economic development entered a new normal of comprehensive quality improvement and efficiency transformation. To better adapt to this new normal, universities should focus more on cultivating innovative thinking, creative ability, practical skills, and the ability to solve complex problems in their talent training models. The shift from focusing on "quantity" expansion to "quality" improvement in talent cultivation is key, which requires practicing the educational philosophy of "integrating knowledge with action, focusing on capability" and a teaching model that enhances students' comprehensive abilities. The core of "knowledge-action integration, capability-based" education is to set capability goals based on the needs of professional positions. The relevance of students' knowledge and practical skills to enterprise demands, the alignment of course settings and classroom teaching with societal needs, and keeping pace with the development of science and technology are crucial.

Course Nature

Real Estate Marketing Planning is a professional course within the Real Estate Operation and Management curriculum of the Engineering Management program. It is a practical discipline developed in conjunction with China's economic development and a specialized branch of the marketing course in management sciences. It is an integrated practical training project developed based on the workflow of marketing

and planning departments in real estate development companies, aiming to equip students with comprehensive real estate marketing planning skills.

Course Objectives

The goal of the "Real Estate Marketing Planning" course is to familiarize students with the basic theories of modern market marketing, to grasp the characteristics of real estate and the real estate market well, and to master basic skills in real estate market marketing such as real estate project planning, product positioning, product pricing, marketing methods, as well as the organization and formulation of marketing schemes. Students should initially have the ability for real estate market marketing, marketing planning, and marketing management. The talent training objectives of this course are threefold: knowledge, ability, and quality. The course aims to foster students' autonomous learning ability and keen interest in the subject, improve their mastery of the knowledge and skills of the course, and prepare students to be immediately competent in marketing planning positions upon graduation.

Basic Requirements of the Course

1) Understand the characteristics of the real estate market and its uniqueness.

2) Understand the concepts and methods of market marketing, as well as the working methods of market marketing management.

3) Be familiar with the connotations and formulation methods of market marketing planning, market competition strategies, and product strategies.

4) Be familiar with the investigation and analysis of the real estate market, master the means and methods of market research, understand the methods of target market segmentation and selection, and be acquainted with the methods of competitor analysis and market purchase behavior analysis.

5) Master the content, especially the channels for information collection, methods of information analysis, and the creativity of collection channels and analysis methods for real estate project competitive and customer analysis.

6) Master and correctly apply the SWOT analysis method for real estate project analysis.

7) Master the considerations and methods of positioning for real estate projects.

8) Understand the various stages of full-process real estate marketing planning.

9) Be familiar with the latest methods of real estate project sales promotion and be able to provide comprehensive, feasible, and effective overall marketing planning solutions.

10) Understand and be familiar with real estate pricing strategies, distribution and promotion strategies, and learn the methods of formulation and implementation of real estate market marketing plans.

Table 2.3 Course content, teaching requirements, and teaching suggestions

Chapter	Teaching Content	Teaching Requirements	Teaching Suggestions
Chapter One: Overview	Concepts, types, principles, and procedures of real estate marketing.	Emphasize the uniqueness of real estate marketing. Key and difficult point: uniqueness.	Immediately assign a project planning task near the school and illustrate the specific meanings of various marketing concepts in real estate marketing.
Chapter Two: Core Techniques	Core techniques of marketing: S.T.P + 4P's.	Review the core techniques of marketing, introducing their application and differences in real estate marketing. Key and difficult point: Still the uniqueness, especially the meaning of target customers.	Interpret core techniques with specific tasks.

Table 2.3 Course content, teaching requirements, and teaching suggestions (continue)

Chapter	Teaching Content	Teaching Requirements	Teaching Suggestions
Chapter Three: Research Content	Real estate research content can be divided into routine and special content. The routine content should be known, while the special content needs special attention.	The research content and scope should be determined according to the planning task. Key and difficult point: Specific task requirements to determine the research content.	Combine practical tasks, providing examples (examples of different stages and scopes).
Chapter Four: Overall Positioning and Project Positioning	The meaning, significance, and methods of overall positioning.	Overall positioning is fundamental, essentially the same as general marketing positioning, yet different. Therefore, the overall positioning section needs thorough explanation. Key and difficult point: The uniqueness of overall positioning in real estate marketing.	Explain that the overall positioning in real estate should not be overly precise.

Table 2.3 Course content, teaching requirements, and teaching suggestions (continue)

Chapter	Teaching Content	Teaching Requirements	Teaching Suggestions
Chapter Five: Full Process Planning	Teaching Content: Meaning, content, principles, methods, processes, techniques, and the art of full process planning.	Teaching Requirements: Emphasize the necessity and importance of full process planning, teaching students the ability and vision to plan "from start to finish". Key and difficult point: The rare opportunity for full process planning in practice, thus the difficulty is how to implement it.	Ideally, there is an opportunity to be involved in full process planning, but usually, it starts from a certain phase, so the suggestion is to teach how to adapt to this situation.
Chapter Six: Sales Promotion	The content and steps of real estate product sales promotion.	It's common in the industry to refer to sales promotion as marketing planning, which needs to be clarified in teaching; Key and difficult point: The combination of effective sales promotion methods.	Understand in conjunction with practical tasks.

Teaching Conditions

Teaching conditions are key to ensuring the achievement of talent training objectives. The optimization of teaching conditions can be approached from two aspects: teaching materials and the construction of the teaching environment.

In terms of teaching materials, the current textbook used is Real Estate Marketing Planning (Third Edition), edited by Wu Xianghua, published by the Chemical Industry Press in June 2018, with the International Standard Book Number (ISBN) 9787122318084. Besides the basic course textbook, the teaching staff can enrich teaching materials and enhance teaching effectiveness by developing experimental teaching materials based on course tasks, creating micro-lessons for difficult and important knowledge, compiling reference bibliographies, and compiling collections of outstanding course cases.

In terms of teaching environment construction, practical teaching can be carried out both inside and outside the school, in conjunction with both software and hardware facilities. For on-campus practical environment construction, the software includes dual-capability teachers and modern information tools, such as the development of self-study systems like apps, video QR codes (for teaching videos such as micro-lessons, case studies, etc.), and marketing simulation software systems. Hardware construction focuses on practical space and equipment like computers, multimedia, and basic network facilities to meet practical needs. For off-campus practical environment construction, software includes sharing of massive online resources and project resources from real estate development companies or marketing consultancy agencies. Hardware construction focuses on the establishment of practical bases.

Course Implementation Requirements

It is recommended that the course consists of 32 class hours, of which 24 class hours are dedicated to classroom teaching (lectures, seminars) and 8 class hours to practical training.

Table 2.4 Course arrangement, class hours, and teaching methods

Serial No.	Serial No.	Class Hours	Main Teaching Methods
1	Overview	4	Lecture, Discussion, Demonstration, Case Analysis
2	Core Theories and Techniques of Marketing	4	Lecture, Discussion, Demonstration, Case Analysis
3	Real Estate Market Research	4	Lecture, Discussion, Demonstration, Case Analysis, Problem-solving Class
4	Overall Positioning in Real Estate Development and Property Development	4	Lecture, Discussion, Demonstration
5	Real Estate Project Positioning	4	Lecture, Discussion, Demonstration, Practical Exercises
6	Full Process Planning in Real Estate	4	Lecture, Discussion, Demonstration, Practical Exercises
7	Guidance on Writing Real Estate Planning Reports	4	Lecture, Discussion, Demonstration, Practical Exercises
8	Real Estate Planning Report Roadshow	4	Lecture, Discussion, Demonstration
	Total	32	

Compilation and Updating of Teaching Plans

There needs to be an overall teaching design for the course, including course learning projects and knowledge and skill modules. For each module, a teaching plan should be designed for each teaching unit, encompassing the learning objectives, work tasks, capability requirements, and specific teaching content broken down into each teaching unit. This includes the organization and requirements of classroom activities, and suggestions for class hours. Course standards require that all teaching plans be managed on an annual version basis. Teaching plans must be revised and improved once a year based on changes in teaching practice and student learning conditions, forming an updated version for the next year's course teaching.

Course Assessment

1) The assessment method focuses on a comprehensive evaluation of students' learning status, combining process evaluation with outcome evaluation, and qualitative with quantitative assessments. In practice, process assessment accounts for 40%, and outcome assessment accounts for 60%.

2) Process Assessment: Real Estate Marketing Planning stage-wise assignments (group performance) contribute 30% + Attendance (individual performance) contributes 10% (Being late or leaving early for roll call deducts 2 points each time, absence from class deducts 5 points each time, cumulative absence of 4 times due to sickness or personal reasons leads to disqualification from the exam and requires retaking the course).

3) Outcome Assessment: Final exam accounts for 60%.

4) Grade Evaluation

Table 2.5 Grade evaluation

Serial Number	Assessment Type	Assessment Method	Assessment Weight
1	Group Assignment Completion and Reporting	Evaluation and Scoring	30%

Table 2.5 Grade evaluation (continue)

Serial Number	Assessment Type	Assessment Method	Assessment Weight
2	Individual Attendance Situation	Wisdom Tree Attendance Points	10%
3	Final Exam	Cumulative Judgment Based on Actual Results	60%
Total Evaluation Score			100%

Related Research

The impact of the Flipped classroom model on improving students' learning achievement has become a hot topic in educational research. As an emerging teaching model, the flipped classroom positively affects students' learning achievement by increasing student engagement, enhancing self-directed learning abilities, providing personalized support, and promoting collaborative learning. Many academics have given the following views on the research related to improving academic performance through the flipped classroom as follows:

Cao Yajie (2020) conducted a semester of flipped classroom teaching with "Algorithms and Data Structures" as the target course in a university; the results found that students had positive learning attitudes before class and could complete learning tasks seriously; they tended to use mobile devices for learning and had time planning awareness, but had poor self-control; factors such as learning attitudes, self-control and time management had a greater impact on learning achievement.

Yin-Yin Ding (2021, p.64) believes that the flipped teaching model significantly improves the post-lesson assessment scores of vocational college students compared to their pre-lesson scores, with a statistical significance level of 0.01. This indicates that compared to traditional teaching models, students can achieve better learning outcomes and higher exam scores in a flipped classroom setting.l.

Chen Wenhao (2021, p.5) et al. concluded that the effect of flipped classroom on students' academic achievement. The main effect size of flipped classroom was 0.44, and the 95% confidence interval was 0.32 to 0.57. According to Cohen's

classification, the effect size was mild when it was less than 0.2, moderate when it was between 0.2 and 0.5, and high when it was greater than 0.8. Therefore, the effect of flipped classroom on learning achievement was moderate. The two-tailed test of main effect, $Z = 6.92$ ($p < 0.001$), reached a statistically significant level, indicating that the use of flipped classroom teaching can effectively improve students' learning achievement.

A meta-analysis of 28 experimental and quasi-experimental studies by Lu, D.S. and Tan, Y. (2021, p.100) showed that flipped classroom was effective in improving the learning achievement of college students; in addition, subject werea, class size, experiment time, and type of knowledge all moderated the flipped classroom to varying degrees.

Kang Yahua (2022, p.5) argues that the effect of the flipped classroom was reflected in the learning achievement of students. Theoretically, the flipped classroom was more helpful than the traditional classroom in improving students' soft skills such as independent learning and communication; therefore, learning achievement in this study includes test scores and soft skills. Exam scores were standardized final grades. The soft competencies were determined based on a self-administered soft competency questionnaire with 10 items, including self-directed learning and self-management, using a 5-point Likert scale. The test scores and soft competencies were weighted 50% each to obtain learning achievement data.

Min-Yu Xiao (2022, p.10) sees flipped learning as shifting lecture time to the pre-class stage, allowing students to do research related to the course before class, thus allowing more time for classroom practice. In the classroom, students bring questions to the teacher and the teacher answers the students' questions in the classroom so that students have more time to practice with the teacher's guidance. Based on this, the researcher proposed a self-regulated flipped learning approach to guide students to set learning goals and support them to monitor their learning status in five stages: goal setting, flipped learning (including pre-class video instruction and class discussion), task sharing, self-evaluation, and self-regulated feedback. In addition, an experiment was conducted in the professional training program to check the effectiveness of the proposed method. The results of the experiment showed that the method significantly

improved students' learning achievement, self-efficacy, self-regulation, and critical thinking skills in order to contribute to improved performance.

In summary, many scholars have used the flipped classroom to change the teaching mode of different types of courses, and the pre-class independent learning and classroom cooperative learning in the flipped classroom were two inseparable parts. In addition, subject werea, group size and collaboration, lab cycle, students' learning attitudes and self-control, and time management all have different moderating effects on the flipped classroom. The flipped classroom significantly improved students' learning achievement, self-efficacy, self-regulation, and critical thinking skills in order to lead to improved performance.

Flipped classroom was a novel teaching method in which teachers use technology resources to create PPTs or small videos of the teaching content to be taught in class and assign them to students before class. Students were no longer passive recipients of knowledge. This learning environment allows for more interaction and personalized contact time between students and teachers, allowing for more personalized learning and education for more students. "Real estate marketing planning" was the core course of real estate marketing direction, covering a wide range of knowledge and strong practicality. It was highly practical and operational, and just providing textbooks, teaching materials, traditional handouts or PPT courseware for students to watch and learn was not enough to update a large amount of learning information, nor does it allow students to develop marketing planning thinking and professional skills in practice. If flipped classroom teaching was combined with project teaching, teaching PPT or video education was integrated into the flipped classroom teaching carrier instead of textbooks and lecture notes, students can easily find the required knowledge, and flipped classroom teaching carriers such as micro-courses allow students' self-learning environment without the limitation of time and space, and teaching practice can be better carried out. Therefore, this study hopes to increase students' interest in learning and improve their learning environment through flipped classroom-based teaching in order to improve students' learning achievement.

Chapter 3
Research Methodology

The development of learning achievement in Real Estate Marketing Planning course using Flipped classroom model of undergraduate students was the experimental research that had two objectives: 1) to development of learning achievement in Real Estate Marketing Planning course using Flipped classroom model of undergraduate students and 2) to compare students' Learning achievement before and after the implementation Flipped classroom model. Research processes have the following procedures:

1. The population / the sample group
2. Research Instruments
3. Data collection
4. Data analysis

The population / the sample group

Population

There were 2 classes of 30 students each, totaling 60 third-year undergraduate students of Engineering Management Program of Shanghai Sanda University.

The Sample Group

Through cluster random sampling, 30 third-year of class 2 undergraduate students with mixed abilities (strong, medium, and weak) were from Engineering Management Program of Shanghai Shanda University.

Research Instruments

The development of learning achievement in Real Estate Marketing Planning course using Flipped classroom model of undergraduate students, the research Instruments were as follows:

1. Lesson plan according to the Flipped classroom model.
2. Learning achievement test.

Lesson plan according to the Flipped classroom model

The purpose of lesson plans was to improve the learning achievement by applying the Flipped classroom model that teaches in Real Estate Marketing Planning course. The lesson plan was divided into the following four learning units:

1. unit 1: General Introduction to Real Estate Marketing and Planning (3 hours)

2. unit 2: Core Marketing Theory and Techniques (3 hours)

3. unit 3: Real Estate Full Planning (3 hours)

4. unit 4: Real Estate Marketing Promotion (3 hours)

The development process of creating Lesson plan according to the Flipped classroom model and assessment form for validity of lesson plan were followed as.

1. Studying the principles of creating Lesson plan according to the Flipped classroom model and assessment form for validity of lesson plan from books, textbooks, articles, and related research.

2. Creating a Lesson plan according to the Flipped classroom model and assessment form for validity of lesson plan, 4 plans as this above.

3. Drafting the assessment form for validity of lesson plan at the end of each section, there was a space for experts to write suggestions that could be helpful in improving students' learning achievement.

4. Taking the instruments to 3 experts to verify the validity. The test consistency the index of congruency was between 0.60-1.00, the level of consideration was as follows:

Rating was +1 There was an opinion that “Corresponds to definition/ measurement objectives.”

Rating was 0 There was an opinion that “Not sure it corresponds to definition/measurement objectives.”

Rating was -1 There was an opinion that “Inconsistent with definition/ measurement objectives.”

5. Modifying assessment form for validity of lesson plan according to suggestion.

6. Taking the research instruments to collect data with the research samples.

Learning achievement test

In this research, the learning achievement was achievement of knowledge that divided into six sub-competencies, including: 1) Remembering 2) Understanding 3) Applying 4) Analyzing 5) Evaluating 6) Creating.

The test questions were designed for these six sub-competencies to assess students' learning achievement. The paper consists of 14 multiple-choice questions and 6 open-ended questions, totaling 20 questions, with each question worth 5 points, for a total of 100 points.

The development process of creating learning achievement test and

assessment form for validity of the test of learning achievement were followed as.

1. Studying the principles of the test of learning achievement and assessment form for validity of the test of learning achievement from books, textbooks, articles, and related research.

2. Creating learning achievement test and assessment form for validity of the test of learning achievement.

3. Taking the instruments to 3 experts to verify the content validity and index of items objective congruence (IOC) of the assessment form learning achievement test consistency the index of congruency was between 0.67-1.00.

4. Modifying assessment form for validity of lesson plan according to suggestion.

5. Taking research instrument to learning achievement test and the result of reliability was 0.96.

6. Taking the research instruments to collect data with the research samples.

Table 3.1 Learning achievement Scoring Criteria

Evaluati-on Items	Evaluation Content	Score and criterion				
		5	4	3	2	1
Remembering	Retrieving, recognizing, and recalling relevant knowledge from long-term memory.	Able to thoroughly and meticulously recall complex information.	Strong recall ability, can accurately remember most information and its key details.	Possesses general recall ability.	Recall ability is at a basic level.	Weak recall ability, only able to remember the most basic and direct information.
Understanding	Constructing meaning from oral, written, and graphic messages through interpreting, exemplifying, classifying, summarizing, inferring, comparing, and explaining.	Students at this level can deeply and comprehensively understand complex information.	Possesses strong understanding ability, can accurately interpret most information and its key details.	Has general understandi ng ability.	Understand-ing ability is at a basic level.	Weak understanding ability, only able to under-stand the most basic and direct information.

Table 3.1 Learning achievement Scoring Criteria (continue)

Evaluation Items	Evaluation Content	Score and criterion				
		5	4	3	2	1
Applying	Carrying out or using a procedure through executing, or implementing.	Students at this level can flexibly apply knowledge in a variety of complex and different contexts.	Has strong application ability, able to accurately apply knowledge in most familiar contexts.	Has general application ability.	Application ability is at a basic level.	Weak application ability, only able to apply knowledge in the most direct and basic contexts.

Table 3.1 Learning achievement Scoring Criteria (continue)

Evaluation Items	Evaluation Content	Score and criterion				
		5	4	3	2	1
Analyzing	Breaking material into constituent parts, determining how the parts relate to one another and to an overall structure or purpose through differentiating, organizing, and attributing.	At this level, students can thoroughly and systematically analyze.	Students can perform a more indepth analysis, though not as comprehensive as a 5-point level.	At this level, students can perform basic analysis, identifying main ideas and arguments, but may have difficulty connecting these to a broader context or other viewpoints.	Analysis mainly remains on the surface; may only identify the most obvious arguments or evidence, without deeply exploring or evaluating their validity.	At this level, students are unable to effectively analyze.

Table 3.1 Learning achievement Scoring Criteria (continue)

Evaluation Items	Evaluation Content	Score and criterion				
		5	4	3	2	1
Evaluating	Making judgments based on criteria and standards through checking and critiquing.	Students at this level can conduct a thorough and comprehensive evaluation.	Possesses strong evaluation ability, can accurately assess information and arguments, often providing effective opinions and suggestions for improvement.	Has general evaluation ability.	Evaluation ability is at a basic level.	Weak evaluation ability, only capable of very basic assessments.
Creating	Putting elements together to form a coherent or functional whole; reorganizing elements into a new pattern or structure through generating, planning, or producing.	Students at this level can demonstrate extremely high innovation and creativity.	Possesses strong creative ability, capable of creating novel works or solutions within familiar domains.	Has general creative ability.	Creative ability is at a basic level.	Weak creative ability, only capable of attempt-ting within a very basic frame-work.

Evaluate quality standards

Score Range	Quality Level
96-100	Strong
86-95	Relatively strong
71-85	General
56-70	Relatively weak
0-55	Weak

Data collection

In this research, the data collection period was used for the first semester of the 2023 academic year from October 23, 2023 to November 3, 2023, total of 12 hours. Follow the steps as follows.

1. This research is experimental research. One Group Pretest – Posttest Design was used with the following experimental design:

Table 3.2 Experimental design

Group	Pretest	Experimental	Posttest
E	T_1	X	T_2

The meaning of the symbols used in the experimental design.

E means Random Sampling

X means experimental

T_1 means Pretest

T_2 means Posttest

2. Taking Learning achievement test to obtained from the analysis, the difficulty value, Discriminant power, and reliability value. Then it was tested before class with the 30 students that were not research samples, these results of the difficulty value was ranged from 0.63 to 0.69, Discriminant power was ranged from 0.56 to 0.66, and reliability value was 0.96, then learning achievement test was improved.

3. Teaching according to lesson Plans that using Flipped classroom model to improve learning achievement. Organized teaching by the researcher about 6 hours

per week, total 12 hours.

4. After completing the teaching, teacher conducted with using the same test of learning achievement to students. The scores obtained from the test were recorded to compare the learning achievement of students before and after learning.

5. Getting data obtained from teaching activities according to using Flipped classroom model to analyze the data according to statistical methods.

Table 3.3 The lesson plans specific teaching time

No.	Date	Time	learning unit
Lesson 1	October 23th 08:00-10:25	3 hours	General Introduction to Real Estate Marketing and Planning
Lesson 2	October 27th 08:00-10:25	3 hours	Core Marketing Theory and Techniques
Lesson 3	October 30th 08:00-10:25	3 hours	Real Estate Full Planning
Lesson 4	November3th 08:00-10:25	3 hours	Real Estate Marketing Promotion

Data analysis

1. Analyze of verified the validity of Real Estate Marketing Planning course based on Flipped classroom model and learning achievement test Use the index of consistency as a criterion for consideration standard (Index of item Objective congruence: IOC).

2. Quantitative data were analyzed through descriptive statistics; means ($\overline{X}$), and standard deviation (SD.).

3. Quantitative data were analyzed through inferential statistics; Then calculate the different score of learning achievement before and after using Flipped classroom model were analyzed through t –test for dependent sample.

Chapter 4

Results of Analysis

The research of this study was to development of learning achievement in Real Estate Marketing Planning course using Flipped classroom model of undergrad students and compare students' learning achievement before and after the implementation Flipped classroom model. The data analysis results were as follows:

1. Symbol and Abbreviations
2. Results of Data Analysis

The details were as follows.

Symbol and Abbreviations

Represent data analysis results based on symbols and semantics. The details were as follows:

$\bar{X}$	means	average value
SD.	means	standard deviation
n	means	number of students
D	means	scores of difference between pre and post class
df	means	degree of freedom
t	means	statistical data for t-test value
**	means	statistical significance at level .01

Results of Data Analysis

Results of development of learning achievement in Real Estate Marketing Planning course by using Flipped classroom model of undergrad students

The Flipped classroom model was a method that breaks the temporal and spatial constraints of traditional classroom instruction. Its aim was to enhance students' interest in learning, strengthen teacher-student interaction and communication, and enliven the classroom atmosphere. By freeing up classroom time, it allows for a deeper understanding of the practical application of knowledge, aiming to increase the

teacher's understanding of students, thereby strengthening individualized student learning, broadening student thinking, and fostering their learning ability, expressive capability, and innovative skills. The flipped classroom teaching method encompasses five stages: pre-class preparation, problem identification, independent exploration, collaborative communication, and result presentation. In this research, based on the flipped classroom teaching steps, the lesson plan was divided into five stages: 1) Pre-lesson Preparation, 2) Identify the problem, 3) independent exploration, 4) collaborative communication, 5) Presentation of Results. We invited three experts to assess the quality of the lesson plan using the flipped classroom approach, and they unanimously believed that the lesson plan was highly suitable for instruction.

This study focused on 30 third-year students from the Engineering Management Department at Shanghai Shanda University as research subjects, aiming to improve undergraduate students' learning achievement using the flipped classroom teaching method. The detailed results of the scores before and after applying the flipped classroom teaching to the Real Estate Marketing Planning course were shown in Table 4.1

Table 4.1 Learning achievement score between before and after learning

Learning achievement	n	Full Scores	Pre-test		Post-test		D
			$\bar{X}$	SD.	$\bar{X}$	SD.	
1. Remembering	30	20	11.00	5.85	12	5.26	1.00
2. Understanding	30	15	9.50	4.58	10	4.24	0.50
3. Applying	30	15	8.50	4.26	10	4.75	1.50
4. Analyzing	30	20	12.00	4.96	13	5.94	1.00
5. Evaluating	30	15	9.00	4.22	11	3.96	2.00
6. Creating	30	15	10.00	3.31	11.8	3.33	1.80
total		100	60	5.12	68	6.92	8

As could be seen from Table 4.1, the changes in the scores of six sub-abilities of undergraduate students using the flipped classroom teaching method were as follows: 1) Remembering: The average score before learning was 11 points, and the

average score after learning was 12 points, with an average difference of 1 point. 2) Understanding: The average score before learning was 9.5 points, and the average score after learning was 10 points, with an average difference of 0.5 points. 3) Applying: The average score before learning was 8.5 points, and the average score after learning was 10 points, with an average difference of 1.5 points. 4) Analyzing: The average score before learning was 12 points, and the average score after learning was 13 points, with an average difference of 1 point. 5) Evaluating: The average score before learning was 9 points, and the average score after learning was 11 points, with an average difference of 2 points. 6) Creating: The average score before learning was 10 points, and the average score after learning was 11.8 points, with an average difference of 1.8 points. After learning, the scores for each item were higher than before learning. Therefore, adopting flipped classroom teaching could improve the learning achievement of undergraduate students, achieving the research objective.

Results of comparing students' learning achievement before and after the implementation of Flipped classroom model

The researchers analyzed the data by employing the scores from the pre-test and post-test of learning achievement. They conducted data analysis using measures like mean, standard deviation, and the t-test dependent for correlated samples. The results of this analysis were presented in Table 4.2

Table 4.2 Comparison of learning achievement before and after class by implementing the Flipped classroom model

Learning achievement		n	Full Point	$\bar{X}$	SD.	t	p
Total score	Pre-test	30	100	60	5.12	9.96**	.00
	Post-test	30	100	68	6.92		

**Statistically significant at level .01 (p <.01)

From Table 4.2, it could be observed that the students' post-learning scores were higher than their pre-learning scores, which was statistically significant at the 0.01 level. The average score of students before employing the flipped classroom teaching

method was 60 points, and after the implementation, it increased to an average of 68 points, with an average difference of 8 points. The results indicate that after adopting the flipped classroom teaching method, students' learning achievement has improved compared to before. The findings were statistically significant.

Learning Behavior

This study utilizes the flipped classroom method to enhance the learning achievement of undergrad students. To validate the research results, researchers observed the students' behavior throughout the teaching and learning process. This study adopted the Flipped classroom model to instruct 30 students from Class 2, third-year undergraduate students majoring in Engineering Management at Shanghai Shanda College, in the course Real Estate Marketing and Planning. The behaviors of students were observed and recorded during five teaching steps for each lesson: Pre-lesson Preparation, Identify the problem, independent exploration, collaborative communication, Presentation of Results. The changes in student behavior indicate that throughout the learning process, their learning achievement consequently improved. The record of students' learning behavior during the teaching activities was as follows:

Step 1 Pre-lesson Preparation

At this stage, students were required to preview relevant textbooks and resources before the formal class begins. This often includes watching videos pre-recorded by the teacher, reading designated articles or textbooks, etc. In this way, students could build a preliminary understanding of the topic that will be discussed in class. Teaching results show that in the first class, only 15 students (50%) completed the pre-class preparation. The remaining 15 students (50%) indicated that they did not prepare. This shows that students lack the awareness to prepare before class and were not proactive in their learning. By the last class, 28 students (93%) were able to complete the pre-class preparation tasks, indicating a significant increase in students' pre-class preparation awareness and a noticeable improvement in their preparation situation. They demonstrated a positive attitude towards classroom learning and recognized the Flipped classroom model, significantly improving their preparedness for class.

Step 2 Identify the problem

At this stage, students might encounter concepts or content they don't understand or have questions about. Before the formal class begins, students were already able to identify the doubts and questions they encountered during the preview process and actively share them with teachers and classmates, preparing for the upcoming classroom discussion. teaching results show that in the first class, students posed a total of 20 questions, averaging 0.67 questions per student. This indicates that students lack the awareness of preparing before class and were not proactive in their learning. By the last class, students posed a total of 90 questions, averaging 3 questions per student. This suggests that students' questioning ability has improved, their curiosity and thirst for knowledge regarding the course content have increased, showcasing their proactive exploration and thinking during pre-class preparation.

Step 3 Independent Exploration

At this stage, apart from the preview materials provided by the teacher, students could also independently search for other resources, such as online articles, videos, or educational software, to help them understand and explore the topic more deeply. The independent exploration segment was invaluable for students, as it deepens their understanding of the learning materials. Teaching results show that in the first class, 10 students (33%) engaged in independent exploration. This suggests that students lack awareness of independent exploration and were not proactive in their learning. By the last session, 25 students (83%) engaged in independent exploration. This indicates that students actively engage in independent thinking and seek answers to their questions. Through this step, students' problem-solving abilities and habits of independent thinking have been further cultivated, and their capacity for independent learning and awareness of autonomous exploration have significantly improved.

Step 4 Cooperative Communication

At this stage, students will have the opportunity to collaborate and communicate with classmates, jointly discussing and solving the problems they encountered during the preview phase. This might include various collaborative learning methods such as group discussions, role-playing, case studies, and more. Through group discussions and collaborative problem-solving, students deepen their

understanding of the knowledge and learn the skills of cooperating and communicating with others. Teaching results show that in the first class, 8 students (27%) participated in collaborative communication. This indicates that students lack an awareness of collaborative communication. By the last class, 27 students (90%) participated in collaborative communication, suggesting a significant enhancement in students' teamwork and communication skills. The teamwork segment promotes communication and collaboration among students, teaching them the benefits of collective brainstorming, and offering various problem-solving methods, which help consolidate and expand the learning content.

Step 5 Presentation of Results

At this stage, after mastering the course content, students will have the opportunity to showcase their learning outcomes. This could be achieved through project presentations, reports, papers, or other forms of assessment. This not only hones the students' expression skills but also boosts their confidence. Teaching results show that in the first class, 6 students (20%) presented their learning outcomes in class. This suggests that students lacked the confidence to showcase their learning achievements. By the last session, 24 students (80%) conducted outcome presentations, indicating that students were more willing and more confident in presenting their learning outcomes. The outcome presentation segment validates the students' learning achievements from the preceding teaching steps and receives affirmation and encouragement from both teachers and classmates.

In summary, based on the Flipped classroom model, the researcher conducted experiments using four lesson plans and found that students from Class 2 of the third-year undergraduate program in Engineering Management at Shanghai Shanda College exhibited significant positive changes in their learning behaviors. From the first to the last session, there was a notable improvement in students' behaviors across all five teaching steps. Through a series of teaching practices, students became more proactive in pre-class preparation, more courageous in raising questions, which fosters independent thinking, more willing to collaborate and communicate with peers, and more inclined to showcase their learning outcomes in class. This positive shift in learning behaviors aligns with their improved academic performance, indicating that

the Flipped classroom model could effectively enhance students' learning achievements and achieved the research objectives.

Chapter 5
Conclusion Discussion and Recommendations

This research, the development of learning achievement in Real Estate Marketing Planning course using Flipped classroom model of undergraduate students was experimental research that has the research objective as follows: 1) To develop of learning achievement in Real Estate Marketing Planning course using Flipped classroom model of undergraduate students. 2)To compare students' Learning achievement before and after the implementation Flipped Classroom Teaching Model.

The sample group consists of 30 third-year of class 2 undergraduate students with mixed abilities (strong, medium, and weak) were from Engineering Management Program of Shanghai Shanda University. The study was conducted using a whole-group random sampling method in the first semester of the 2023 academic year.

The research instruments used in this study were as follows: 1) Lesson plan based on Flipped classroom model which were 4 lesson plans, total 12 hours. Unit 1: General Introduction to Real Estate Marketing and Planning, unit 2: Core Marketing Theory and Techniques, unit 3: Real Estate Full Planning, unit 4: Real Estate Marketing Promotion. 2) Learning achievement tests that there were 20 questions. Learning of knowledge into six distinct levels: remembering, understanding, applying, analyzing, evaluating, and creating. These levels are conceptually independent, representing a cognitive process that ranges from simple to complex.

Conclusion

According to the research topic, the summary of the research on development of learning achievement in Real Estate Marketing Planning course using Flipped classroom model of undergraduate students was as follows:

1. The development of learning achievement in Real Estate Marketing Planning course using Flipped classroom model which includes five steps: 1) Pre-lesson Preparation, 2) Identify the problem, 3) independent exploration, 4) collaborative

communication, 5) Presentation of Results. This method can improve undergraduate students' learning achievement in the Real Estate Marketing Planning course, achieving the research objective.

2. The comparing students' learning achievement before and after teaching with the flipped classroom model, the average score of undergraduate students in pre-class assessments was 60 of full score 100 , and in post-class assessments, it was 68. The post-class assessment scores were significantly higher than pre-class assessment scores at a statistical significance level of .01. This aligns with the research hypothesis.

Discussion

Research on development of learning achievement in Real Estate Marketing Planning course using Flipped classroom model of undergraduate students was conducted in the first semester of the 2023 academic year. It involved the study of academic performance cultivation for 30 undergraduate students in Grade 3, Class 2 of the Engineering Management program at Shanghai Sanda University using the flipped classroom teaching model. This research can be discussed from two aspects:

1. The development of learning achievement in Real Estate Marketing Planning course using Flipped classroom model of undergraduate students, the researchers divided the lesson plan writing into five steps according to the flipped classroom teaching model: 1) Pre-lesson Preparation, 2) Identify the problem, 3) independent exploration, 4) collaborative communication, 5) Presentation of Results. The assessment of learning achievement performance was tested through six sub-skills: 1) Remembering, 2) Understanding, 3) Applying, 4) Analyzing, 5) Evaluating, 6) Creating. Data analysis was conducted by three experts who evaluated the quality of lesson plans based on the flipped classroom teaching model, with the results presented by experts evaluating the lesson plan quality. Using the flipped classroom model to improve learning achievement was necessary. Under this teaching model, students become the main body of learning, with teachers acting as guides and helpers. Through mutual assistance and cooperation, this model was conducive to students mastering knowledge, enhancing learning enthusiasm, and thereby improving each student's learning achievement. This was consistent with Tian Ke's (2022) who conducted the

research on the application of flipped classroom in high school language reading teaching. His research findings, which suggest that the flipped classroom could be conducive to students mastering knowledge, enhancing learning enthusiasm, and thereby improving each student's learning achievement and truly reflect the student's principal position. In traditional classrooms, students passively receive knowledge, not fully reflecting their principal position, so students with poor self-control often cannot concentrate and learn efficiently. In contrast, in the flipped classroom, students can pause or speed up the lessons as per their individual needs during the pre-class autonomous learning, truly meeting the needs of students at different levels. In class, students shift from being mere receivers and listeners to participants and speakers. In-class exploratory learning promotes 'deep dialogue' between teachers and students and among students themselves, strengthens one-to-one guidance by teachers in class, and enables teachers to focus on individual students. The process of inquiry helps students understand texts more deeply, truly learn to analyze texts, and apply what they have learned when solving problems. The transformation of classroom roles stimulates students' enthusiasm for active learning and sharing, making the classroom atmosphere more lively and the teaching effect more pronounced. Moreover, the findings was consistent with Dominguez (2021) who conducted the research on Flipped classroom in the educational system: Trend or effective pedagogical model compared to other methodologies. This research found that the flipped classroom method was more effective in terms of Learning performance than other methods. In secondary and higher education, it may be more beneficial for other constructs, such as motivation, self-efficacy, cooperativeness, and participation. And there are similar findings to Xiao Wenyu's (2022) who conducted the research on Analysis of the correlation between physical education activities at home for lower grade primary school students and changes in academic performance. His research also confirmed the results of this study. Xiao Wenyu believes that flipped learning involves transferring lecture time to the pre-class stage, allowing students to conduct study and research related to the course before class, thereby having more time for classroom practice. In the classroom, students come with questions for the teacher, who answers them in class, allowing students more time to practice under the teacher's guidance. Based on

this, the researchers proposed a self-regulated flipped learning method to guide students in setting learning goals and supporting them in monitoring their learning status across five stages. Additionally, an experiment was conducted in a professional training program to examine the effectiveness of the proposed method. The experimental results showed that this method significantly improved students' academic performance, self-efficacy, self-regulation skills, and critical thinking abilities, which in turn facilitated the improvement of their grades. In addition to this, Lu, D., & Tan, Y. (2021) who conducted the research on the impact of flipped classroom on the learning effectiveness of vocational college students: Evidence from a meta-analysis based on a random effects model., his research also confirmed the results of this study. They conducted a meta-analysis of 28 experimental and quasi-experimental studies, which showed that flipped classrooms effectively improve college students' learning achievement; moreover, the subject werea, class size, experiment duration, and type of knowledge all have varying degrees of moderating effects on flipped classrooms. The teaching process of the Flipped classroom model generally includes five steps. With the continuous advancement of new curriculum reforms, the theoretical and practical research on teaching models was also showing a booming trend. To meet the talent training requirements of the new era, advocating the Flipped classroom model was given significant importance. Different literature further elaborates on the development and implementation of the flipped classroom teaching model.

2. The Comparison of students' learning achievement before and after the implementation flipped classroom teaching model. Researchers studied many literatures and research related to the Flipped classroom model and conducted research based on the undergraduate flipped classroom teaching model. According to the research results, adopting the Flipped classroom model can promote undergraduate to improve their learning achievement in the Real Estate Marketing Planning course. The results showed that the average score before learning was 60 points, and the average score after learning was 68 points, with an average difference of 8 points. The results show that, the average score of undergraduate students in pre-class assessments was 60 (SD = 5.12), and in post-class assessments, it was 68 (SD = 6.92).

The post-class assessment scores were significantly higher than pre-class assessment scores at a statistical significance level of 0.01. This aligns with the research hypothesis. The finding was consistent with Ding Yinyin (2021) who conducted the research on A meta-analysis of the impact of flipped classroom on higher education students' academic performance. Ding Yinyin believes that the flipped teaching model significantly improves the post-lesson assessment scores of vocational college students compared to their pre-lesson scores, with a statistical significance level of 0.01. This indicates that compared to traditional teaching models, students can achieve better learning outcomes and higher exam scores in a flipped classroom setting. Moreover, the findings was consistent with Chen Wenhao et al.'s (2021) who conducted the research on the effect of flipped classroom on academic achievement in primary and secondary schools, their research also verified the results of this study. Chen Wenhao and others believe in the impact effect on students' learning achievement. The main effect size of the flipped classroom was 0.44, with a 95% confidence interval of 0.32 to 0.57. According to Cohen's classification suggestions, when the effect size was less than 0.2, it was a slight impact; an effect size between 0.2 and 0.5 was a moderate impact; and an effect size of 0.8 or higher was a highly significant impact. Therefore, the impact of the flipped classroom on learning achievement was moderate. The two-tailed test of the main effect size $Z=6.92$ ($P<0.001$) reached a statistically significant level, indicating that using the flipped classroom teaching can effectively improve students' learning achievement. The Flipped classroom model was a breakthrough from the traditional classroom teaching's time and space limitations, by releasing classroom time for in-depth understanding of the practical application of knowledge, to achieve an improved understanding of students by teachers. The results show that using flipped classroom teaching can improve undergraduates' learning achievement, achieving the research objective.

Recommendations

General recommendation

1. The flipped classroom model, the teacher no longer acts solely as a dispenser of knowledge but increasingly becomes a guide and facilitator for students' learning.

Therefore, teachers should undergo necessary training to learn how to make the best use of this teaching approach.

2. Teachers should provide high-quality learning materials, such as videos, animations, or other interactive resources in order to ensure that students could effectively prepare before the class. These materials should be updated in a timely manner based on student feedback and learning needs. Online resources for the flipped classroom should be appropriately concise, centered on what students should master, with more complex wassues reserved for in-class discussions.

3. Students should be encouraged to prepare before the class, engage in online discussions, ask questions, and share their opinions. This helps in building a learning community among students and promotes in-depth study.

4. The classroom time should mainly focus on in-depth discussions, group collaborations, and case analyses. Teachers should design engaging and challenging activities to promote student interaction and discussion.

5. Teachers should regularly collect feedback from students to understand their learning progress and needs, and adjust teaching strategies accordingly.

Suggestions for further research

1. Beyond the course Real Estate Marketing Planning, future research could explore the effectiveness of the flipped classroom model in other disciplines to see if it's equally effective.

2. While this study has demonstrated that the flipped classroom model can improve students' learning achievement, further research was needed to investigate the long-term effects of this model on students' overall learning outcomes and career development.

3. In the future, consideration can be given to combining the flipped classroom with other teaching methods, such as a blend of online and offline learning, to determine which combination yields the best learning outcomes.

4. It's worth exploring how different student traits (like learning styles, cognitive abilities, etc.) impact the outcomes of the flipped classroom, in order to provide more personalized teaching recommendations.

5. Research the long-term effects of flipped classroom on student learning outcomes, including knowledge acquisition, skill development, and attitude changes.

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Appendixes

Appendix A

List of Specialists and Letters of Specialists Invitation for IOC Verification

List of Experts

List of Specialists and Letters of Specialists Invitation for IOC Verification

Name of Experts	Position/Office
1. Associate Professor Dr. Jittawisut Wimuttipanya	Ph.D. Curriculum and Instruction Bansomdejchaopraya Rajabhat University
2. Associate Professor Dr. Narongwat Mingmit	Ph.D. Education for locality Development Bansomdejchaopraya Rajabhat University
3. Associate Professor Dr. Yu Qianlong	Ph.D. in Education University of Shanghai for Science and Technology

Appendix B

Official Letter

Ref.No. MHESI 0643.14/1224

Bansomdejchaopraya
Rajabhat University
1061 Itsaraparb Hirunrujee
Thonburi Bangkok 10600

19 October 2023

RE: Invitation to validate research instrument

Dear Associate Professor Dr.Jittawisut Wimuttipanya

Miss Shen Yan is a graduate student in Master of Education Program in Curriculum and Instruction of Bansomdejchaopraya Rajabhat University. She is undertaking research entitled "The Development of Learning Achievement in Real Estate Marketing Planning Course Using Flipped Classroom Teaching Model of Undergrad Students."

The thesis adversity committee has considered that you are an expert in this topic. Your recommendations would be useful for further improvement of this research instrument.

We respectfully request your assistance in validating a research instrument that is attached to this message. We would be grateful for any help you can provide in this matter. We would like to express our sincere appreciation for your time and expertise. If you have any questions or concerns, please do not hesitate to contact Miss Shen Yan at 707099891@qq.com.

Thank you for considering our request.

Sincerely,

Nainapas I.

(Dr.Nainapas Injoungjirakit)
Vice Dean, For Dean of the Graduate School

Bansomdejchaopraya Rajabhat University
Tel.+662-473-7000 ext. 1814
www.bsru.ac.th

Ref.No. MHESI 0643.14/1225

Bansomdejchaopraya
Rajabhat University
1061 Itsaraparb Hirunrujee
Thonburi Bangkok 10600

19 October 2023

RE: Invitation to validate research instrument

Dear Associate Professor Dr.Narongwat Mingmit

Miss Shen Yan is a graduate student in Master of Education Program in Curriculum and Instruction of Bansomdejchaopraya Rajabhat University. She is undertaking research entitled "The Development of Learning Achievement in Real Estate Marketing Planning Course Using Flipped Classroom Teaching Model of Undergrad Students."

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(Dr.Nainapas Injoungjirakit)
Vice Dean, For Dean of the Graduate School

Ref.No. MHESI 0643.14/1226

Bansomdejchaopraya
Rajabhat University
1061 Itsaraparb Hirunrujee
Thonburi Bangkok 10600

19 October 2023

RE: Invitation to validate research instrument

Dear Associate Professor Dr.Yu Qianlong

Miss Shen Yan is a graduate student in Master of Education Program in Curriculum and Instruction of Bansomdejchaopraya Rajabhat University. She is undertaking research entitled "The Development of Learning Achievement in Real Estate Marketing Planning Course Using Flipped Classroom Teaching Model of Undergrad Students."

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Appendix C

Research Instruments

Lesson planI

The first semester of the third academic year

Department	Department of Engineering Management, Shanghai Sanda University
Course name	Real Estate Marketing Planning: Chapter 1 introduction
Target Audience	third -year of class 2
Number of students	30
Teaching Time	3 hours
Lecturer	Shen Yan

Contents

General Introduction to Real Estate Marketing and Planning

Objective

1. Students can recall basic concepts, terms, and definitions related to the real estate market, marketing strategies, and planning fundamentals.

2. Students can describe the importance of real estate marketing planning and its role in the overall real estate market.

3. Students can apply the planning tools and methods they have learned to real estate marketing planning.

4. Students can identify market trends and analyze their impact on real estate marketing planning.

5. Students can evaluate and critique existing real estate marketing cases, offering suggestions for improvement.

6. Students can integrate resources from various sources and innovatively solve problems encountered in real estate marketing.

Main point/Concept

1. Real estate marketing planning: This concept refers to the strategies and plans formulated in the real estate industry to promote, sell, and develop projects. The goal

of real estate marketing planning is to attract potential buyers and achieve sales and profitability through effective market positioning, marketing activities, and strategies.

2. Real estate market: This concept encompasses all relevant participants and environments in the real estate field, including developers, investors, buyers, tenants, government policies, market demand, etc. Understanding the characteristics, trends, and competitive conditions of the real estate market is crucial for developing effective marketing planning.

3. Target market: The target market refers to a specific group or population with the potential willingness and ability to purchase in a real estate project. Real estate marketing planning requires market research and analysis to determine the characteristics, needs, and preferences of the target market, in order to better meet their needs and develop corresponding marketing strategies.

4. Market positioning: Market positioning refers to clearly defining the position of a real estate project relative to competitors in the target market. By identifying the unique selling points of the project, the positioning of the target market, and differentiation strategies, real estate marketing planning can attract target customers and gain a competitive advantage.

5. Marketing plan: A marketing plan refers to a detailed plan and action steps for implementing marketing strategies. The marketing plan includes setting objectives, developing promotional activities, selecting appropriate marketing channels, allocating budgets, setting timelines, etc., to ensure the effective execution of marketing strategies.

Learning Activity

Flipped Classroom Model learning activities have 5 stages as follows: 1) Pre-lesson Preparation, 2) Identify the problem, 3) Independent Exploration, 4) Cooperative Communication, 5) Presentation of Results

Step 1: Pre-lesson Preparation

1.1 Allocation of Resources: The teacher will release textbook chapters, related articles, video tutorials, and other learning materials in advance. These materials will cover the theme of the first chapter, including the basic concepts, objectives, importance, planning process, etc., of real estate marketing and planning for students to study independently.

1.2 Preview Guidance: Guide students to think about and focus on some key questions, set some guiding questions, and lead students to think about and understand these materials. Such as: "What are the main objectives of real estate

marketing and planning?" "What elements should a successful real estate marketing and planning strategy include?" etc.

1.3 Assign Tasks: Students are required to search for materials related to the course content from the Internet or the library.

1.4 Pose Questions: Students need to preview on their own within the specified time, and need to raise doubts or questions they encounter during the preview process, for discussion in class.

Step 2: Identify the problem

2.1 Group Discussions: The teacher guides students to review pre-class materials and organizes in-class group discussions about the problems and confusion found in pre-class learning, posing questions or challenges related to the introduction to real estate planning.

2.2 Teacher Guidance: The teacher observes and guides, ensuring that each group can identify core issues.

2.3 Creating a List of Questions: Students are encouraged to summarize and record the issues they find, creating a list of questions. The teacher must categorize the issues in preparation for subsequent group research activities.

Step 3: Independent Exploration

3.1 Case Analysis: Provide actual real estate marketing and planning cases for students to analyze, and combine them with their pre-class knowledge to understand the process of real estate marketing and planning.

3.2 Task Allocation: Based on the identified problems, the teacher assigns specific research tasks to each group, with each group studying a type of question posed in the second stage.

3.3 Independent Research: Team members need to assign tasks among themselves, utilizing internet resources, books, articles, databases, etc., to conduct independent research on the questions.

3.4 Process Feedback: The teacher circulates and observes, providing immediate feedback and guidance.

Step 4 : Cooperative Communication

4.1 Group Collaboration: Divide students into groups, encouraging them to discuss and solve problems together, sharing their discoveries from the independent exploration phase. Each group needs to prepare answers to the questions and prepare corresponding explanatory content.

4.2 Cross-Group Communication: Different groups exchange research results, learning from each other.

4.3 Teacher Guidance: The teacher guides students' communication and collaboration, ensuring that all students actively participate.

4.4 Teacher Feedback: Provide professional feedback, guiding students to optimize their solutions.

Step 5: Presentation of Results

5.1 Results Presentation: Each group needs to revise their answers based on discussion and feedback. Each group presents their research findings to the entire class using methods such as reports, PPTs, or videos.

5.2 Peer Review and Self-Evaluation: Students present their results in front of the class, with other students asking questions or commenting. Students assess each other and engage in self-reflection. The whole class discusses each group's presentation, learning from and inspiring each other.

5.3 Teacher Evaluation: The teacher provides professional evaluations and feedback on the performance of each group, including not only the accuracy and completeness of the content but also cooperation, communication, creativity, etc. The teacher also summarizes the entire flipped classroom activity.

Learning Resources

1. Textbooks: Provide relevant textbooks and reference books that introduce the theory and practice of real estate marketing planning.

2. Video Lectures: Prepare short videos or recorded lectures for students to study and review before class.

3. Group Discussion Materials: Prepare some relevant planning cases and materials for students to use during group discussions.

Learning Assessment

1. Through tests or quizzes, check students' memory of the course content.

2. By providing brief descriptions or examples, examine students' ability to explain or elaborate on the course knowledge.

3. Through case studies, simulated exercises, or practical application tasks, assess students' ability to apply the course knowledge.

4. Through in-depth discussions or written analysis, evaluate students' analytical skills on the course content.

5. By offering various marketing planning strategy cases, inspect students' evaluative skills on the course knowledge.

6. By presenting actual or simulated real estate marketing challenges, assess the creativity applied to the course knowledge.

Timetable: 3 hours **Courses:** Chapter 1 General Introduction to Real Estate Marketing and Planning

Date/time	**Teaching Process**	**Remark**
Day 1 (October 23th)	Using the Flipped Classroom Model Teaching content: Introduction overview, fundamental concepts of real estate marketing.	
8:00-8:10	Introduction	10 minutes
8:10-8:25	Step 1: Pre-lesson Preparation Students need to preview on their own within the specified time, understand the basic concepts and principles of planning introduction, and raise doubts or questions they encounter during the preview process, for discussion in class.	15minutes
8:25-8:45	Step 2: Identify the problem The teacher guides students to review pre-class materials and organizes in-class group discussions about the problems and confusion found in pre-class learning. They pose questions or challenges related to the introduction to real estate planning, allowing students to summarize and record the issues they find, creating a list of questions.	20 minutes
8:45-8:50	Break time	

Date/time	Teaching Process	Remark
8:50-9:10	Step 3: Independent Exploration The teacher assigns specific research tasks to each group, with each group studying a type of question posed in the second stage, sharing their views and ideas.	20 minutes
9:10-9:35	Step 4: Cooperative Communication Students are divided into groups, encouraged to discuss and solve problems together, sharing their discoveries from the independent exploration phase. Each group needs to prepare answers to the questions and prepare corresponding explanatory content.	25 minutes
9:35-9:40	Break time	
9:40-10:25	Step 5: Presentation of Results Each group presents their research findings to the entire class, and the whole class discusses each group's presentation, learning from and inspiring each other. The teacher provides professional evaluations and feedback on the performance of each group.	20 minutes

Assessment form for Validity of General Introduction to Real Estate Marketing and Planning lesson plan

Research Title: The development of learning achievement in Real Estate Marketing Planning course using Flipped Classroom Model of undergraduate students

Research Objectives:

1. To develop of learning achievement in Real Estate Marketing Planning course using Flipped Classroom Model of undergraduate students.

2. To compare students' learning achievement before and after the implementation Flipped Classroom Model.

Directions:

Please assess the congruence between components of lesson plan based on Problem Based Learning model by putting ✓ in the box according to the following criteria.

Rating is +1. There is an opinion that “consistent to relevant.”

Rating is 0. There is an opinion that “Not sure it consistent to relevant.”

Rating is -1. There is an opinion that “Inconsistent with relevant.”

No.	Questions	Assessment Results			Suggestions
		+1	0	- 1	
1	Learning objectives arrange the content from easy to difficult.				
2	The Flipped Classroom Model encourages students to collaborate in teams and solve problems rationally.				
3	Determine content that's appropriate for students' age.				
4	Organize activities that align with the learning objectives.				

No.	Questions	Assessment Results			Suggestions
		+1	0	- 1	
5	Flipped classroom learning activities genuinely motivate improvements in student performance.				
6	Learning activities connect from foundational knowledge to posing questions, expressing genuine thoughts, and facilitating effective discussions.				
7	The instructional media used is appropriate for the learning activities.				
8	The duration of the learning activities is suitable for improving undergraduate students' performance in the "Real Estate Marketing Planning" course.				
9	Measurements and evaluations are appropriate for learning activities aimed at improving academic performance.				
1 0	Assessment criteria are relevant for subjective learning.				

Sign.....Assessor

(.....)

Date...../...../.....

Lesson planII

The first semester of the third academic year

Department	Department of Engineering Management, Shanghai Sanda University
Course name	Real Estate Marketing Planning: Chapter 2 Core Marketing
Target Audience	third -year of class 2
Number of students	30
Teaching Time	3 hours
Lecturer	Shen Yan

Contents

Core Marketing Theory and Techniques

Objective

1. Students can proficiently recall the key terms, core theories, and basic techniques of real estate market marketing.

2. Students should understand and explain the significance and application scenarios of real estate market marketing theories.

3. Students should be able to apply the learned marketing theories and techniques to real-life real estate market cases.

4. Students can analyze the dynamics and trends of the real estate market, as well as how to use the knowledge learned for effective market marketing.

5. Students can evaluate the effectiveness and applicability of different real estate market marketing strategies and techniques.

6. Students can innovatively design new real estate market marketing strategies and techniques based on the knowledge acquired.

Main point/Concept

1. Market Segmentation and Target Market: Understanding the segmentation of the real estate market and the target customer groups is the foundation for developing marketing strategies. By analyzing demographic data, consumer preferences, and

demands, the market can be divided into different segments and the most promising target market can be identified.

2. Brand Building: Establishing and shaping brand image is crucial in real estate marketing. By conveying unique value propositions, providing excellent product and service quality, and establishing emotional connections with the target market, the brand's position in consumers' minds can be solidified.

3. Market Research: Market research helps to understand customer needs, competitors' strategies, and market trends. This includes quantitative and qualitative research methods such as surveys, focus group discussions, and competitive analysis to gather key information about the target market.

4. Product Positioning and Differentiation: Determining the positioning of the product in the market and differentiating it from competitors is key to a successful marketing strategy. By emphasizing the unique features, advantages, and value of the product, the target customers can be attracted and motivated to choose your product over competitors'.

5. Promotion and Advertising Activities: Effective promotion and advertising activities contribute to increasing brand awareness and sales. This includes means such as advertisements, promotional events, public relations, and social media marketing to attract potential customers and convey the value of the product.

6. Customer Relationship Management: Building and maintaining good customer relationships are crucial in the real estate industry. By providing personalized services, promptly responding to customer needs, and establishing long-term partnerships, customer loyalty can be increased, and the benefits of word-of-mouth communication can be gained.

Learning Activity

Flipped Classroom Model learning activities have 5 stages as follows: 1) Pre-lesson Preparation, 2) Identify the problem, 3) Independent Exploration, 4) Cooperative Communication, 5) Presentation of Results

Step 1: Pre-lesson Preparation

1.1 Allocate Resources: The teacher will publish textbook chapters, related articles, video tutorials, etc., in advance. These materials will cover the themes of Chapter 2, including market segmentation, targeting, differentiated competitive strategies, market research, etc., for self-study.

1.2 Assign Tasks: Students are required to find materials related to the course content from the Internet or library.

1.3 Raise Questions: Students need to preview within a specified time and need to raise their doubts or questions encountered during the preview process for discussion in class.

1.4 Online Testing: Assess students' basic knowledge through simple online tests.

Step 2: Identify the problem

2.1 Group Discussion: At the beginning of the class, the teacher guides students to review pre-class materials and discuss pre-reading materials within groups, raising questions or challenges about marketing core theoretical techniques.

2.2 Teacher Guidance: The teacher observes and guides, ensuring that each group can identify core problems.

2.3 Create a List of Questions: Students summarize and record the problems they discover, forming a list of questions, and the teacher needs to categorize them to prepare for subsequent group research activities.

Step 3: Independent Exploration

3.1 Case Analysis: Provide real cases from the real estate market for students to analyze and understand how market positioning is established, combining their pre-study knowledge.

3.2 Task Allocation: Based on identified problems, the teacher assigns specific research tasks to each group, finding methods of real estate market positioning in the cases.

3.3 Independent Research: Encourage students to search for different instances of real estate market positioning, encouraging them to find different sources of information, such as books, journals, online resources, etc.

3.4 Practical Operation: Simulate a real estate project, letting students try to formulate the market positioning process.

Step 4 : Cooperative Communication

4.1 Group Collaboration: Divide students into groups, encourage them to discuss and solve problems together, and complete a market positioning report for a simulated project within a specified time.

4.2 Cross-group Exchange: Different groups exchange research results, learning from each other.

4.3 Teacher Guidance: The teacher guides students' communication and collaboration, ensuring that all students actively participate.

4.4 Teacher Feedback: Provide professional feedback, guiding students to optimize their solutions.

Step 5: Presentation of Results

5.1 Results Presentation: Each group needs to revise their answers based on discussion and feedback, submit a market positioning report for the simulated project, and present their research results to the whole class using reports, PPTs, etc.

5.2 Peer and Self-Evaluation: Students present their results in front of the class, and other students ask questions or comment. Encourage students to evaluate each other and reflect on themselves. The whole class discusses each group's presentation, learning and inspiring each other.

5.3 Teacher Evaluation: The teacher provides professional evaluations and feedback on each group's performance, including not only the accuracy and completeness of the content but also cooperation, communication, creativity, etc., and summarizes the entire flipped classroom activity.

Learning Resources

1. Textbooks: Provide relevant textbooks and reference books that introduce the core theories and techniques of real estate marketing.

2. Video Explanations: Prepare short videos or recorded explanations for students to study and review before class.

3. Group Discussion Materials: Prepare some relevant case studies and materials on market segmentation, target market positioning, and differentiation competitive strategies for students to use during group discussions.

Learning Assessment

1. Through tests or quizzes, check students' memory of the course content.

2. By providing brief descriptions or examples, examine students' ability to explain or elaborate on the course knowledge.

3. Through case studies, simulated exercises, or practical application tasks, assess students' ability to apply the course knowledge.

4. Through in-depth discussions or written analysis, evaluate students' analytical skills on the course content.

5. By offering various marketing planning strategy cases, inspect students' evaluative skills on the course knowledge.

6. By presenting actual or simulated real estate marketing challenges, assess the creativity applied to the course knowledge.

Timetable: 3 hours **Courses:** Chapter 2 Core Marketing Theory and Techniques

Date/time	Teaching Process	Remark
Day2 (October 27th)	Using the Flipped Classroom Model, teaching content: overview of market marketing, market segmentation, target market selection, market positioning.	
8:00-8:10	Introduction	10 minutes
8:10-8:25	Step 1: Pre-lesson Preparation Students need to self-study the basic concepts and methods of core marketing theories and techniques within a specified time, and must raise any doubts or questions encountered during this preview process for discussion in class.	15minutes
8:25-8:45	Step 2: Identify the problem Students need to self-study within a specified time to understand the basic concepts and methods of core marketing theories and techniques. They should also raise any doubts or questions encountered during this preparatory phase for discussion in the classroom.	20 minutes
8:45-8:50	Break time	
8:50-9:10	Step 3: Independent Exploration Based on the problems identified, the teacher assigns specific research tasks to each group, finding methods of market positioning in real estate cases.	20 minutes

Date/time	Teaching Process	Remark
9:10-9:35	Step 4: Cooperative Communication Students are divided into groups, encouraged to collectively explore and solve problems. Within a set timeframe, each group completes a market positioning report for a simulated project through discussion, deepening their understanding of the subject.	25 minutes
9:35-9:40	Break time	
9:40-10:25	Step 5: Presentation of Results Each group presents their research findings to the entire class. The class as a whole discusses each group's presentation, learning from and inspiring each other. The teacher provides professional evaluations and feedback on the performance of each group.	20 minutes

Assessment form for Validity of Core Marketing Theory and Techniques

Research Title: The development of learning achievement in Real Estate Marketing Planning course using Flipped Classroom Model of undergraduate students

Research Objectives:

1. To develop of learning achievement in Real Estate Marketing Planning course using Flipped Classroom Model of undergraduate students.

2. To compare students' learning achievement before and after the implementation Flipped Classroom Model.

Directions:

Please assess the congruence between components of lesson plan based on Problem Based Learning model by putting ✓ in the box according to the following criteria.

Rating is +1. There is an opinion that “consistent to relevant.”

Rating is 0. There is an opinion that “Not sure it consistent to relevant.”

Rating is -1. There is an opinion that “Inconsistent with relevant.”

No.	Questions	Assessment Results			Suggestions
		+1	0	- 1	
1	Learning objectives arrange the content from easy to difficult.				
2	The Flipped Classroom Model encourages students to collaborate in teams and solve problems rationally.				
3	Determine content that's appropriate for students' age				
4	Organize activities that align with the learning objectives.				

No.	Questions	Assessment Results			Suggestions
		+1	0	- 1	
5	Flipped classroom learning activities genuinely motivate improvements in student performance.				
6	Learning activities connect from foundational knowledge to posing questions, expressing genuine thoughts, and facilitating effective discussions.				
7	The instructional media used is appropriate for the learning activities.				
8	The duration of the learning activities is suitable for improving undergraduate students' performance in the "Real Estate Marketing Planning" course.				
9	Measurements and evaluations are appropriate for learning activities aimed at improving academic performance.				
10	Assessment criteria are relevant for subjective learning.				

Sign.....Assessor

(.....)

Date...../...../.....

Lesson plan III

The first semester of the third academic year

Department	Department of Engineering Management, Shanghai Sanda University
Course name	Real Estate Marketing Planning: Chapter 3 Real Estate Full Planning
Target Audience	third -year of class 2
Number of students	30
Teaching Time	3 hours
Lecturer	Shen Yan

Contents

Real Estate Full Planning

Objective

1. Students can proficiently remember the basic process, key stages, and related terminology of comprehensive real estate planning.

2. Students can clearly explain the objectives, methods, and importance of each planning stage.

3. Students can select and use appropriate planning tools and methods based on specific project needs.

4. Students can identify and analyze external and internal factors that may impact planning.

5. Students can evaluate the strengths and weaknesses of an existing real estate planning scheme and provide suggestions.

6. Students can innovatively design and optimize comprehensive real estate planning schemes to cater to the needs of various types of projects.

Main point/Concept

1. Concept of End-to-End Planning: End-to-end planning in real estate refers to the comprehensive planning and management throughout the entire lifecycle of a real estate project, from initial planning to project marketing and operation. The goal of end-to-end planning is to ensure successful project implementation and maximize value creation.

2. Pre-Planning: Pre-planning refers to the strategic planning and preparation work carried out before the initiation of a real estate project. This includes market research, feasibility analysis, site selection, project positioning, etc., to ensure that the project aligns with market demands and achieves success in a competitive market environment.

3. Project Design and Development: The project design and development phase involves planning and management aspects related to architectural design, construction management, and engineering quality control. This includes determining the project's design concept, selecting appropriate architects and contractors, and overseeing project progress and quality.

4. Marketing and Promotion: Marketing and promotion are integral parts of end-to-end planning in real estate. This includes identifying target customer segments, devising marketing strategies, conducting advertising and promotional activities, organizing sales events, etc., to attract potential buyers or tenants and drive sales and leasing.

5. Project Operation and Management: End-to-end planning in real estate also encompasses project operation and management. This includes planning and executing aspects such as property management, leasing management, maintenance, and repairs to ensure the smooth operation of the project and customer satisfaction.

Learning Activity

Flipped Classroom Model learning activities have 5 stages as follows: 1) Pre-lesson Preparation, 2) Identify the problem, 3) Independent Exploration, 4) Cooperative Communication, 5) Presentation of Results

Step 1: Pre-lesson Preparation

1.1 Resource Allocation: Teachers release textbook chapters, related articles, video tutorials, and other learning resources in advance. These materials will cover the topics of Chapter 3, providing students with concepts of the full planning process, project planning, product design, marketing strategies, etc., for self-study.

1.2 Task Assignment: Students are required to search the internet or libraries for materials related to the course content.

1.3 Question-raising: Students need to self-study within a designated time and pose any doubts or questions they encounter for class discussion.

1.4 Online Testing: Evaluate students' foundational knowledge through a simple online test.

Step 2: Identify the problem

2.1 Group Discussion: At the beginning of the class, teachers guide students to review pre-class materials and discuss in groups to identify key issues in real estate planning.

2.2 Teacher Guidance: Distribute case studies related to full real estate planning for students to identify problems.

2.3 Formulate Question List: Students should summarize and record the problems they find, creating a list. Teachers should categorize these problems to prepare for subsequent group research activities.

Step 3: Independent Exploration

3.1 Case Study: Provide real-life case studies of real estate marketing planning for students to analyze, helping them understand how to formulate real estate marketing strategies.

3.2 Task Assignment: Based on identified problems, students choose a real estate marketing strategy topic for in-depth research.

3.3 Independent Research: Encourage students to search for various real estate marketing strategy examples and to find information from different sources like books, journals, and online resources.

3.4 Practical Operation: Simulate a real estate project, allowing students to try and formulate a real estate marketing strategy on their own.

Step 4 : Cooperative Communication

4.1 Group Collaboration: Divide students into groups, encouraging them to collectively discuss and solve problems. Within a set timeframe, each group should discuss and complete a simulated real estate project marketing strategy.

4.2 Expert Forum: Invite real estate marketing experts for online or offline sharing sessions where students can ask questions.

4.3 Teacher Guidance: Teachers guide students in their discussions and collaborations, ensuring active participation from all.

4.4 Teacher Feedback: Provide professional feedback, guiding students to improve their solutions.

4.5 Role-playing: Use methods like role-playing to simulate real marketing promotion scenarios.

Step 5: Presentation of Results

5.1 Result Display: Each group should revise their answers based on feedback, submit their simulated real estate project marketing strategy, and present their findings to the class using methods like reports, PPTs, etc.

5.2 Peer Review and Self-assessment: Students present their outcomes in front of the class, allowing for questions or comments. Students evaluate each other and reflect on their own work. The entire class discusses each group's presentation, learning, and drawing inspiration from one another.

5.3 Teacher Assessment: Teachers give professional evaluations and feedback on each group's performance, considering not just content accuracy and completeness, but also collaboration, communication, creativity, and summarize the entire flipped classroom activity.

Learning Resources

1. Textbooks: Provide relevant textbooks and reference books that introduce the theory and practice of end-to-end real estate planning.

2. Video explanations: Prepare short videos or recorded explanations for students to study and review before class.

3. Group discussion materials: Prepare some relevant real estate end-to-end planning cases and materials for students to use during group discussions.

Learning Assessment

1. Through tests or quizzes, check students' memory of the course content.

2. By providing brief descriptions or examples, examine students' ability to explain or elaborate on the course knowledge.

3. Through case studies, simulated exercises, or practical application tasks, assess students' ability to apply the course knowledge.

4. Through in-depth discussions or written analysis, evaluate students' analytical skills on the course content.

5. By offering various marketing planning strategy cases, inspect students' evaluative skills on the course knowledge.

6. By presenting actual or simulated real estate marketing challenges, assess the creativity applied to the course knowledge.

Timetable: 3 hours **Courses:** Chapter3 Real Estate Full Planning

Date/time	Teaching Process	Remark
Day3 (October 30th)	Using the Flipped Classroom Model, the instructional content includes: an overview of full-process planning, project planning, product design, and marketing strategies.	
8:00-8:10	Introduction	10 minutes
8:10-8:25	Step 1: Pre-lesson Preparation Students need to self-study within the stipulated time, understanding the basic concepts and methods of real estate full-process planning, and need to raise any doubts or questions they encounter during the preview so that they can be discussed in class.	15minutes
8:25-8:45	Step 2: Identify the problem The teacher guides students to review the pre-class materials, organizes students into groups to discuss the problems and confusions discovered during pre-class learning, raises questions or challenges about real estate full-process planning, and allows students to summarize and record the problems they find, forming a list of questions.	20 minutes
8:45-8:50	Break time	
8:50-9:10	Step 3: Independent Exploration Based on the problems identified, students are allowed to choose a topic related to real estate marketing strategies for in-depth research.	20 minutes
9:10-9:35	Step 4: Cooperative Communication Students are divided into groups, encouraged to collaboratively explore and solve problems. Within a specified time, each group completes a simulated real estate project marketing strategy plan through discussion.	25 minutes
9:35-9:40	Break time	

Date/time	Teaching Process	Remark
9:40-10:25	Step 5: Presentation of Results Each group presents their research findings to the entire class. The class as a whole discusses each group's presentation, learning from and inspiring each other. The teacher provides professional evaluations and feedback on the performance of each group.	20 minutes

Assessment form for Validity of Real Estate Full Planning

Research Title: The development of learning achievement in Real Estate Marketing Planning course using Flipped Classroom Model of undergraduate students

Research Objectives:

1. To develop of learning achievement in Real Estate Marketing Planning course using Flipped Classroom Model of undergraduate students.

2. To compare students' learning achievement before and after the implementation Flipped Classroom Model.

Directions:

Please assess the congruence between components of lesson plan based on Problem Based Learning model by putting ✓ in the box according to the following criteria.

Rating is +1. There is an opinion that "consistent to relevant."

Rating is 0. There is an opinion that "Not sure it consistent to relevant."

Rating is -1. There is an opinion that "Inconsistent with relevant."

No.	Questions	Assessment Results			Suggestions
		+1	0	- 1	
1	Learning objectives arrange the content from easy to difficult.				
2	The Flipped Classroom Model encourages students to collaborate in teams and solve problems rationally.				
3	Determine content that's appropriate for students' age				
4	Organize activities that align with the learning objectives.				

No.	Questions	Assessment Results			Suggestions
		+1	0	- 1	
5	Flipped classroom learning activities genuinely motivate improvements in student performance.				
6	Learning activities connect from foundational knowledge to posing questions, expressing genuine thoughts, and facilitating effective discussions.				
7	The instructional media used is appropriate for the learning activities.				
8	The duration of the learning activities is suitable for improving undergraduate students' performance in the Real Estate Marketing Planning course.				
9	Measurements and evaluations are appropriate for learning activities aimed at improving academic performance.				
10	Assessment criteria are relevant for subjective learning.				

Sign.....Assessor

(.....)

Date...../...../.....

Lesson plan IV

The first semester of the third academic year

Department	Department of Engineering Management, Shanghai Sanda University
Course name	Real Estate Marketing Planning: Chapter 4 Real Estate Marketing Promotion
Target Audience	third -year of class 2
Number of students	30
Teaching Time	3 hours
Lecturer	Shen Yan

Contents

Real Estate Marketing Promotion

Objective

1. Students can accurately recall key terms and concepts related to real estate marketing and promotion.

2. Students can describe and explain the basic principles and methods of real estate marketing promotion.

3. Students can apply the knowledge they've learned about real estate marketing promotion to simple case analyses.

4. Students can analyze and distinguish the marketing promotion strategies needed for different real estate projects.

5. Students can evaluate the effectiveness of a given real estate promotion case and provide improvement suggestions.

6. Students can design a simple real estate marketing activity plan based on real-life situations.

Main point/Concept

1. Market positioning and target customers: The first step in real estate marketing and promotion is to clarify market positioning and target customers. This includes identifying the positioning attributes of the project, target customer groups, consumer

needs, and preferences, in order to conduct targeted marketing and promotional activities.

2. Brand building and image shaping: Brand building and image shaping are crucial in real estate marketing and promotion. By conveying unique brand value propositions, establishing brand image and identity, and building a good brand reputation in the market, it can attract target customers and establish brand loyalty.

3. Promotional activities and marketing strategies: Real estate marketing and promotion involve various promotional activities and marketing strategies aimed at attracting potential customers and driving sales. This may involve advertising, publicity, promotional events, sales incentive programs, etc., to increase project visibility and attractiveness.

4. Digital marketing and online channels: With the advent of the digital era, real estate marketing and promotion increasingly rely on digital marketing and online channels. This includes using social media platforms, search engine marketing, website optimization, etc., to increase online exposure, improve search engine rankings, and interact with potential customers.

5. Traditional media and public relations activities: In addition to digital marketing, traditional media and public relations activities still play an important role in real estate marketing and promotion. This includes placing advertisements in newspapers, television, radio, and other traditional media, as well as collaborating with media for press releases, event coverage, and other public relations activities.

6. Data analysis and evaluation: Real estate marketing and promotion require data analysis and evaluation to understand the effectiveness and returns of marketing activities. By collecting and analyzing market data, sales data, and customer feedback, it is possible to optimize marketing strategies and make appropriate adjustments.

Learning Activity

Flipped Classroom Model learning activities have 5 stages as follows: 1) Pre-lesson Preparation, 2) Identify the problem, 3) Independent Exploration, 4) Cooperative Communication, 5) Presentation of Results

Step 1: Pre-lesson Preparation

1.1 Resource Allocation: Teachers will release textbook chapters, related articles, video tutorials, and other learning materials in advance, covering the themes of Chapter 4, including an overview of marketing promotion, brand building and promotion, advertising and publicity, online promotion, and social media marketing, for self-study.

1.2 Task Assignment: Students are required to find course-related materials from the Internet or libraries.

1.3 Raising Questions: Students need to preview the material within a stipulated time and raise doubts or questions they encounter for classroom discussion.

1.4 Online Testing: Assess students' basic knowledge through a simple online test.

Step 2: Identify the problem

2.1 Group Discussion: At the beginning of class, the teacher guides students to review pre-class materials and discuss key problems in real estate marketing promotion within groups.

2.2 Teacher Guidance: Distribute some failed real estate marketing cases to let students unearth problems.

2.3 Formulating a Question List: Students summarize and record the problems they find, forming a question list. Teachers need to categorize questions to prepare for subsequent group research activities.

Step 3: Independent Exploration

3.1 Case Analysis: Provide real cases of real estate marketing promotion for students to analyze and understand how to develop real estate marketing promotion plans.

3.2 Task Assignment: Based on discovered problems, students choose a marketing promotion topic for in-depth study.

3.3 Independent Research: Encourage students to search for different examples of real estate marketing promotion from various sources, such as books, journals, online resources, etc.

3.4 Practical Operation: Simulate a real estate project, allowing students to independently try to formulate a real estate marketing promotion plan.

Step 4 : Cooperative Communication

4.1 Group Collaboration: Divide students into groups, encouraging them to discuss and solve problems together, completing a simulated real estate project marketing promotion plan within a specified time.

4.2 Expert Forum: Invite experts in real estate marketing for online or offline sharing, allowing students to ask questions and interact.

4.3 Teacher Guidance: The teacher guides students' communication and collaboration to ensure all students are actively involved.

4.4 Teacher Feedback: Provide professional feedback, guiding students to optimize their solutions.

4.5 Role-Playing: Simulate real marketing promotion scenarios through methods such as role-playing.

Step 5: Presentation of Results

5.1 Results Presentation: Each group needs to revise and submit their simulated real estate project marketing promotion plan based on discussions and feedback, presenting their research findings to the whole class, using reports, PPT, etc.

5.2 Peer and Self-Assessment: Students present their outcomes in front of the class, with others asking questions or commenting. Students evaluate each other and reflect on themselves. The whole class discusses each group's presentation, learning from and inspiring each other.

5.3 Teacher Evaluation: The teacher provides professional evaluation and feedback on each group's performance, including accuracy, completeness of content, collaboration, communication, creativity, and summarizes the entire flipped classroom activity.

Learning Resources

1. Textbooks: Provide relevant textbooks and reference books that introduce the theory and practice of real estate marketing and promotion.

2. Video explanations: Prepare short videos or recorded explanations for students to study and review before class.

3. Group discussion materials: Prepare some relevant real estate marketing and promotion cases and materials for students to use during group discussions.

Learning Assessment

1. Through tests or quizzes, check students' memory of the course content.

2. By providing brief descriptions or examples, examine students' ability to explain or elaborate on the course knowledge.

3. Through case studies, simulated exercises, or practical application tasks, assess students' ability to apply the course knowledge.

4. Through in-depth discussions or written analysis, evaluate students' analytical skills on the course content.

5. By offering various marketing planning strategy cases, inspect students' evaluative skills on the course knowledge.

6. By presenting actual or simulated real estate marketing challenges, assess the creativity applied to the course knowledge.

Timetable: 3 hours **Courses:** Chapter 4 Real Estate Marketing Promotion

Date/time	Teaching Process	Remark
Day4 (November 3th)	Using the Flipped Classroom Model, the teaching content includes: an overview of marketing promotion, brand building and promotion, advertising and publicity, online promotion, and social media marketing.	
8:00-8:10	Introduction	10 minutes
8:10-8:25	Step 1: Pre-lesson Preparation Students need to self-study within a specified time to understand the basic concepts and methods of real estate marketing and promotion. They also need to raise any doubts or questions they encountered during their preview so that they can be discussed in class.	15minutes
8:25-8:45	Step 2: Identify the problem The teacher guides the students to review the pre-class materials, organizes group discussions in class to discuss the issues and confusion found in pre-class learning, raises questions or challenges about real estate marketing promotion, and asks the students to summarize and record the problems they have found to form a list of problems.	20 minutes
8:45-8:50	Break time	
8:50-9:10	Step 3: Independent Exploration Based on the identified problems, students choose a theme related to real estate marketing promotion for in-depth study.	20 minutes

Date/time	Teaching Process	Remark
9:10-9:35	Step 4: Cooperative Communication Students are divided into groups and encouraged to discuss and solve problems together. Within the allotted time, each group completes a simulated real estate marketing promotion plan through discussion.	25 minutes
9:35-9:40	Break time	
9:40-10:25	Step 5: Presentation of Results Each group presents their research findings to the whole class. The entire class discusses each group's presentation, learning and inspiring each other. The teacher gives professional evaluations and feedback on the performance of each group.	20 minutes

Assessment form for Validity of Real Estate Marketing Promotion

Research Title: The development of learning achievement in Real Estate Marketing Planning course using Flipped Classroom Model of undergraduate students

Research Objectives:

1. To develop of learning achievement in Real Estate Marketing Planning course using Flipped Classroom Model of undergraduate students.

2. To compare students' learning achievement before and after the implementation Flipped Classroom Model.

Directions:

Please assess the congruence between components of lesson plan based on Problem Based Learning model by putting ✓ in the box according to the following criteria.

Rating is +1. There is an opinion that “consistent to relevant.”

Rating is 0. There is an opinion that “Not sure it consistent to relevant.”

Rating is -1. There is an opinion that “Inconsistent with relevant.”

No.	Questions	Assessment Results			Suggestions
		+1	0	- 1	
1	Learning objectives arrange the content from easy to difficult.				
2	The Flipped Classroom Model encourages students to collaborate in teams and solve problems rationally.				
3	Determine content that's appropriate for students' age				
4	Organize activities that align with the learning objectives.				

No.	Questions	Assessment Results			Suggestions
		+1	0	- 1	
5	Flipped classroom learning activities genuinely motivate improvements in student performance.				
6	Learning activities connect from foundational knowledge to posing questions, expressing genuine thoughts, and facilitating effective discussions.				
7	The instructional media used is appropriate for the learning activities.				
8	The duration of the learning activities is suitable for improving undergraduate students' performance in the "Real Estate Marketing Planning" course.				
9	Measurements and evaluations are appropriate for learning activities aimed at improving academic performance.				
1 0	Assessment criteria are relevant for subjective learning.				

Sign.....Assessor

(.....)

Date...../...../.....

Learning achievement test

30 undergraduate students

Pretest – Posttest

Clarification

Please answer the questions according to the title, each question is worth 5 points, 20 questions in total, 100 points in total.

Part 1 : Please Choose one correct answer from the four options, each question is worth 5 points, 14 questions in total, for a total of 70 points.

1. What is the first step in real estate marketing planning?

A. Design advertisements
B. Market research
C. Determine budget
D. Hire a team

2.What is the main goal of real estate marketing planning?

A. Increase brand awareness
B. Increase sales
C. Reduce costs
D. Increase market share

3. What are the four Ps of real estate?

A. Product, Price, Place, Promotion
B. People, Process, Physical evidence, Strategy
C. Price, Place, People, Process
D. Product, People, Strategy, Promotion

4. Why is determining the target market important for real estate marketing planning?

A. Save on advertising costs
B. Ensure the sale of the house

C. Attract potential buyers
D. Understand buyer needs

5. Why is market analysis crucial in real estate marketing planning?
A. It helps identify target customers
B. It can reduce marketing costs
C. It increases sales volume
D. It enhances the company's reputation/brand awareness

6. If residents in an area prefer modern designs, how should developers adjust their architectural strategy?
A. Add traditional elements
B. Adopt modern architectural styles
C. Reduce construction costs
D. Use a mixed style

7. If market research shows that families mainly focus on school districts and greenery, how should developers apply this information?
A. Build more commercial facilities
B. Emphasize these two points in advertisements
C. Reduce property prices
D. Improve property quality

8. Which of the following is NOT a key factor when assessing the potential for buying property in a region?
A. Transportation convenience
B. Nearby commercial facilities
C. Historic buildings
D. School district

9. In analyzing the real estate marketing strategies of competitors, which item should not be overlooked?
A. Pricing strategy
B. Promotional activities
C. Customer service
D. Human resource management

10. Which information is least relevant when analyzing a potential competitor for a new market entry?

A. Their marketing strategy
B. Their brand image
C. Their company history
D. Their product features

11. How do you evaluate the success of a real estate marketing strategy?

A. Number of sales
B. Customer satisfaction
C. Advertising volume
D. Construction cost

12. Which metric should be the main focus when evaluating the effectiveness of a real estate marketing plan?

A. Number of likes on social media
B. Number of times advertisements are run
C. Sales volume
D. Number of customer inquiries

13. In order to attract more buyers, what innovative offerings can real estate developers provide?

A. VR house demonstrations
B. Traditional advertising
C. More agents
D. Lower prices

14. To enhance the appeal of a real estate project, what innovative strategy can a company adopt?

A. Increase traditional advertising
B. Offer virtual house demonstrations
C. Lower prices
D. Increase the number of agents

Part 2 Please answer the questions according to the title, each question is worth 5 points, 6 questions in total, 30 points in total.

15. List the three core components of real estate marketing planning.

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16. Explain why market research is important in real estate marketing planning.

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17. Suppose you are a real estate marketing planner, and you are now launching a new residential project targeting young families. Please describe your strategy.

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18. Describe how to use PEST analysis in real estate marketing planning.

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19. Based on your experience, list three methods to evaluate the effectiveness of real estate marketing planning.

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20. Imagine a unique social media marketing strategy for real estate.

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Evaluation criteria for learning achievement

Evaluation Items	Evaluation Content	Score and criterion				
		5	4	3	2	1
Remembering	Retrieving, recognizing, and recalling relevant knowledge from long-term memory.	Able to thoroughly and meticulously recall complex information.	Strong recall ability, can accurately remember most information and its key details.	Possesses general recall ability.	Recall ability is at a basic level.	Weak recall ability, only able to remember the most basic and direct information.
Understanding	Constructing meaning from oral, written, and graphic messages through interpreting, exemplifying, classifying, summarizing, inferring, comparing, and explaining.	Students at this level can deeply and comprehensively understand complex information.	Possesses strong understanding ability, can accurately interpret most information and its key details.	Has general understanding ability.	Understanding ability is at a basic level.	Weak understanding ability, only able to understand the most basic and direct information.

Evaluation Items	Evaluation Content	Score and criterion				
		5	4	3	2	1
Applying	Carrying out or using a procedure through executing, or implementing.	Students at this level can flexibly apply knowledge in a variety of complex and different contexts.	Has strong application ability, able to accurately apply knowledge in most familiar contexts.	Has general application ability.	Application ability is at a basic level.	Weak application ability, only able to apply knowledge in the most direct and basic contexts.

Evaluation Items	Evaluation Content	Score and criterion				
		5	4	3	2	1
Analyzing	Breaking material into constituent parts, determining how the parts relate to one another and to an overall structure or purpose through differentiating, organizing, and attributing.	At this level, students can thoroughly and systematically analyze.	Students can perform a more in-depth analysis, though not as comprehensive as a 5-point level.	At this level, students can perform basic analysis, identifying main ideas and arguments, but may have difficulty connecting these to a broader context or other viewpoints.	Analysis mainly remains on the surface; may only identify the most obvious arguments or evidence, without deeply exploring or evaluating their validity.	At this level, students are unable to effectively analyze.

Evaluation Items	Evaluation Content	Score and criterion				
		5	4	3	2	1
Evaluating	Making judgments based on criteria and standards through checking and critiquing.	Students at this level can conduct a thorough and comprehensive evaluation.	Possesses strong evaluation ability, can accurately assess information and arguments, often providing effective opinions and suggestions for improvement.	Has general evaluation ability.	Evaluation ability is at a basic level.	Weak evaluation ability, only capable of very basic assessments.

Evaluation Items	Evaluation Content	Score and criterion				
		5	4	3	2	1
Creating	Putting elements together to form a coherent or functional whole; reorganizing elements into a new pattern or structure through generating, planning, or producing.	Students at this level can demonstrate extremely high innovation and creativity.	Possesses strong creative ability, capable of creating novel works or solutions within familiar domains.	Has general creative ability.	Creative ability is at a basic level.	Weak creative ability, only capable of attempting within a very basic framework.

Evaluate quality standards

Score Range	Quality Level
96-100	Strong
86-95	Relatively strong
71-85	General
56-70	Relatively weak
0-55	Weak

Assessment form for Validity of learning achievement test

Directions:

Please check the correspondence/appropriateness of the variables to be investigated against the definition of learning achievement. Please put a "√" in the box to assess the consistency of learning achievement variable among third -year of undergrad students based on the following criteria.

Rating is +1. There is an opinion that “consistent to relevant.”

Rating is 0. There is an opinion that “Not sure it consistent to relevant.”

Rating is -1. There is an opinion that “Inconsistent with relevant.”

Part 1 Defines the main variables and sub-variables of learning achievement

variable/indicator	define	expert			suggestion
		+1	0	-1	
1. Remembering	Retrieving, recognizing, and recalling relevant knowledge from long-term memory.				
2. Understanding	Constructing meaning from oral, written, and graphic messages through interpreting, exemplifying, classifying, summarizing, inferring, comparing, and explaining.				

variable/indicator	define	expert			suggestion
		+1	0	-1	
3. Applying	Carrying out or using a procedure through executing, or implementing.				
4. Analyzing	Breaking material into constituent parts, determining how the parts relate to one another and to an overall structure or purpose through differentiating, organizing, and attributing.				
5. Evaluating	Making judgments based on criteria and standards through checking and critiquing.				
6. Creating	Putting elements together to form a coherent or functional whole; reorganizing elements into a new pattern or structure through generating, planning, or producing.				

Part 2 Assessment Program for learning achievement test					
No	Assessment Program	expert			suggestion
		+1	0	-1	
Remembering					
1. What is the first step in real estate marketing planning? A. Design advertisements **B. Market research** C. Determine budget D. Hire a team					
2. What is the main goal of real estate marketing planning? A. Increase brand awareness **B. Increase sales** C. Reduce costs D. Increase market share					
3. What are the four Ps of real estate? **A. Product, Price, Place, Promotion** B. People, Process, Physical evidence, Strategy C. Price, Place, People, Process D. Product, People, Strategy, Promotion					
Understanding					
4. Why is determining the target market important for real estate marketing planning? A. Save on advertising costs B. Ensure the sale of the house C. Attract potential buyers **D. Understand buyer needs**					
5. Why is market analysis crucial in real estate marketing planning? **A. It helps identify target customers** B. It can reduce marketing costs C. It increases sales volume					

Part 2 Assessment Program for learning achievement test					
No	Assessment Program	expert			suggestion
		+1	0	-1	
D. It enhances the company's reputation/brand awareness					
Applying					
6. If residents in an area prefer modern designs, how should developers adjust their architectural strategy? A. Add traditional elements **B. Adopt modern architectural styles** C. Reduce construction costs D. Use a mixed style					
7. If market research shows that families mainly focus on school districts and greenery, how should developers apply this information? A. Build more commercial facilities **B. Emphasize these two points in advertisements** C. Reduce property prices D. Improve property quality					
Analyzing					
8. Which of the following is NOT a key factor when assessing the potential for buying property in a region? A. Transportation convenience B. Nearby commercial facilities **C. Historic buildings** D. School district					
9. In analyzing the real estate marketing strategies of competitors, which item should not be overlooked? **A. Pricing strategy** B. Promotional activities C. Customer service D. Human resource management					

Part 2 Assessment Program for learning achievement test					
No	Assessment Program	expert			suggestion
		+1	0	-1	
10. Which information is least relevant when analyzing a potential competitor for a new market entry? A. Their marketing strategy B. Their brand image **C. Their company history** D. Their product features					
Evaluating					
11. How do you evaluate the success of a real estate marketing strategy? **A. Number of sales** B. Customer satisfaction C. Advertising volume D. Construction cost					
12. Which metric should be the main focus when evaluating the effectiveness of a real estate marketing plan? A. Number of likes on social media B. Number of times advertisements are run **C. Sales volume** D. Number of customer inquiries					
Creating					
13. In order to attract more buyers, what innovative offerings can real estate developers provide? **A. VR house demonstrations** B. Traditional advertising C. More agents D. Lower prices					

Part 2 Assessment Program for learning achievement test					
No	Assessment Program	expert			suggestion
		+1	0	-1	
14. To enhance the appeal of a real estate project, what innovative strategy can a company adopt? A. Increase traditional advertising **B. Offer virtual house demonstrations** C. Lower prices D. Increase the number of agents					
Remembering					
15. List the three core components of real estate marketing planning.					
Understanding					
16. Explain why market research is important in real estate marketing planning.					
Applying					
17. Suppose you are a real estate marketing planner, and you are now launching a new residential project targeting young families. Please describe your strategy.					
Analyzing					
18. How to use PEST analysis in real estate marketing planning.					

Part 2 Assessment Program for learning achievement test					
No	Assessment Program	expert			suggestion
		+1	0	-1	
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Evaluating					
19. Based on your experience, list three methods to evaluate the effectiveness of real estate marketing planning.					
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Creating					
20. Imagine a unique social media marketing strategy for real estate.					
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Assessment form for Validity of lesson plan I-IV

Research Title: The development of learning achievement in Real Estate Marketing Planning course using Flipped Classroom Model of undergrad students

Research Objectives:

1. To development of learning achievement in Real Estate Marketing Planning course using Flipped Classroom Model of undergrad students.

2. To compare students' learning achievement before and after the implementation Flipped Classroom Model.

Directions:

Please assess the congruence between components of lesson plan based on Problem Based Learning model by putting ✓ in the box according to the following criteria.

Rating is +1. There is an opinion that “consistent to relevant.”

Rating is 0. There is an opinion that “Not sure it consistent to relevant.”

Rating is -1. There is an opinion that “Inconsistent with relevant.”

No.	Questions	Assessment Results			Suggestions
		+1	0	- 1	
1	Learning objectives arrange the content from easy to difficult.				
2	The Flipped Classroom Model encourages students to collaborate in teams and solve problems rationally.				
3	Determine content that's appropriate for students' age				
4	Organize activities that align with the learning objectives.				

No.	Questions	Assessment Results			Suggestions
		+1	0	- 1	
5	Flipped classroom learning activities genuinely motivate improvements in student performance.				
6	Learning activities connect from foundational knowledge to posing questions, expressing genuine thoughts, and facilitating effective discussions.				
7	The instructional media used is appropriate for the learning activities.				
8	The duration of the learning activities is suitable for improving undergraduate students' performance in the Real Estate Marketing Planning course.				
9	Measurements and evaluations are appropriate for learning activities aimed at improving academic performance.				
10	Assessment criteria are relevant for subjective learning.				

Sign.....Assessor

(.....)

Date...../...../.....

Appendix D

The Results of the Quality Analysis of Research Instruments

Table 1 Analysis of the Index of Coherence (IOC) of lesson plans to improve learning achievement of undergrad students with Flipped Classroom Model

Evaluation checklist	experts			Sum of scores	IOC value
	1	2	3		
Lesson Plan I: General Introduction to Real Estate Marketing and Planning					
1. Learning objectives arrange the content from easy to difficult.	+1	+1	+1	3	1
2. The Flipped Classroom Model encourages students to collaborate in teams and solve problems rationally.	+1	+1	+1	3	1
3. Determine content that's appropriate for students' age	+1	+1	+1	3	1
4. Organize activities that align with the learning objectives.	+1	+1	+1	3	1
5. Flipped classroom learning activities genuinely motivate improvements in student performance.	+1	+1	+1	3	1
6. Learning activities connect from foundational knowledge to posing questions, expressing genuine thoughts, and facilitating effective discussions.	+1	+1	0	3	0.67
7. The instructional media used is appropriate for the learning activities.	+1	+1	+1	3	1
8. The duration of the learning activities is suitable for improving undergraduate students' performance in the "Real Estate Marketing Planning" course.	+1	+1	+1	3	1
9. Measurements and evaluations are appropriate for learning activities aimed at improving academic performance.	+1	0	+1	3	0.67

Table 1 (continue)

Evaluation checklist	experts			Sum of scores	IOC value
	1	2	3		
10. Assessment criteria are relevant for subjective learning.	+1	+1	+1	3	1
Lesson Plan 2: Core Marketing Theory and Techniques					
1. Learning objectives arrange the content from easy to difficult.	+1	+1	+1	3	1
2. The Flipped Classroom Model encourages students to collaborate in teams and solve problems rationally.	+1	+1	+1	3	1
3. Determine content that's appropriate for students' age	+1	+1	+1	3	1
4. Organize activities that align with the learning objectives.	+1	+1	+1	3	1
5. Flipped classroom learning activities genuinely motivate improvements in student performance.	+1	+1	+1	3	1
6. Learning activities connect from foundational knowledge to posing questions, expressing genuine thoughts, and facilitating effective discussions.	+1	+1	0	3	0.67
7. The instructional media used is appropriate for the learning activities.	+1	+1	+1	3	1
8. The duration of the learning activities is suitable for improving undergraduate students' performance in the "Real Estate Marketing Planning" course.	+1	+1	+1	3	1

Table 1 (continue)

Evaluation checklist	experts			Sum of scores	IOC value
	1	2	3		
9. Measurements and evaluations are appropriate for learning activities aimed at improving academic performance.	+1	0	+1	3	0.67
10. Assessment criteria are relevant for subjective learning.	+1	+1	+1	3	1
Lesson Plan 3: Real Estate Full Planning					
1. Learning objectives arrange the content from easy to difficult.	+1	+1	+1	3	1
2. The Flipped Classroom Model encourages students to collaborate in teams and solve problems rationally.	+1	+1	+1	3	1
3. Determine content that's appropriate for students' age	+1	+1	+1	3	1
4. Organize activities that align with the learning objectives.	+1	+1	+1	3	1
5. Flipped classroom learning activities genuinely motivate improvements in student performance.	+1	+1	+1	3	1
6. Learning activities connect from foundational knowledge to posing questions, expressing genuine thoughts, and facilitating effective discussions.	+1	+1	0	3	0.67
7. The instructional media used is appropriate for the learning activities.	+1	+1	+1	3	1

Table 1 (continue)

Evaluation checklist	experts			Sum of scores	IOC value
	1	2	3		
8. The duration of the learning activities is suitable for improving undergraduate students' performance in the "Real Estate Marketing Planning" course.	+1	+1	+1	3	1
9. Measurements and evaluations are appropriate for learning activities aimed at improving academic performance.	+1	0	+1	3	0.67
10. Assessment criteria are relevant for subjective learning.	+1	+1	+1	3	1
Lesson Plan 4: Real Estate Marketing Promotion					
1. Learning objectives arrange the content from easy to difficult.	+1	+1	+1	3	1
2. The Flipped Classroom Model encourages students to collaborate in teams and solve problems rationally.	+1	+1	+1	3	1
3. Determine content that's appropriate for students' age	+1	+1	+1	3	1
4. Organize activities that align with the learning objectives.	+1	+1	+1	3	1
5. Flipped classroom learning activities genuinely motivate improvements in student performance.	+1	+1	+1	3	1
6. Learning activities connect from foundational knowledge to posing questions, expressing genuine thoughts, and facilitating effective discussions.	+1	+1	0	3	0.67

Table 1 (continue)

Evaluation checklist	experts			Sum of scores	IOC value
	1	2	3		
7. The instructional media used is appropriate for the learning activities.	+1	+1	+1	3	1
8. The duration of the learning activities is suitable for improving undergraduate students' performance in the "Real Estate Marketing Planning" course.	+1	+1	+1	3	1
9. Measurements and evaluations are appropriate for learning activities aimed at improving academic performance.	+1	0	+1	3	0.67
10. Assessment criteria are relevant for subjective learning.	+1	+1	+1	3	1

Table 2 Consistency Index (IOC) Analysis of learning achievement with survey variables.

Evaluation checklist	Comment score			Sum of scores	IOC value
	1	2	3		
1. Remembering Retrieving, recognizing, and recalling relevant knowledge from long-term memory.	+1	+1	+1	3	1
2. Understanding Constructing meaning from oral, written, and graphic messages through interpreting, exemplifying, classifying, summarizing, inferring, comparing, and explaining.	+1	+1	+1	3	1
3. Applying Carrying out or using a procedure through executing, or implementing.	+1	+1	+1	3	1
4. Analyzing Breaking material into constituent parts, determining how the parts relate to one another and to an overall structure or purpose through differentiating, organizing, and attributing.	+1	+1	+1	3	1
5. Evaluating Making judgments based on criteria and standards through checking and critiquing.	+1	+1	+1	3	1
6. Creating Putting elements together to form a coherent or functional whole; reorganizing elements into a new pattern or structure through generating, planning, or producing.	+1	+1	+1	3	1

Table 3 Consistency Index (IOC) Analysis of learning achievement test of undergrad students

No.	Assessment Program	Comment score			Sum of scores	IOC value
		+1	0	-1		
Remembering						
1. What is the first step in real estate marketing planning? A. Design advertisements **B. Market research** C. Determine budget D. Hire a team		+1	+1	+1	3	1
2. What is the main goal of real estate marketing planning? A. Increase brand awareness **B. Increase sales** C. Reduce costs D. Increase market share		+1	+1	+1	3	1
3. What are the four Ps of real estate? **A. Product, Price, Place, Promotion** B. People, Process, Physical evidence, Strategy C. Price, Place, People, Process D. Product, People, Strategy, Promotion		+1	+1	+1	3	1

No.	Assessment Program	Comment score			Sum of scores	IOC value
		+1	0	-1		
Understanding						
4. Why is determining the target market important for real estate marketing planning? A. Save on advertising costs B. Ensure the sale of the house C. Attract potential buyers **D. Understand buyer needs**		+1	+1	+1	3	1
5. Why is market analysis crucial in real estate marketing planning? **A. It helps identify target customers** B. It can reduce marketing costs C. It increases sales volume D. It enhances the company's reputation/brand awareness		+1	+1	+1	3	1
Applying						
6. If residents in an area prefer modern designs, how should developers adjust their architectural strategy? A. Add traditional elements **B. Adopt modern architectural styles** C. Reduce construction costs D. Use a mixed style		+1	+1	+1	3	1
7. If market research shows that families mainly focus on school districts and greenery, how should developers apply this information? A. Build more commercial facilities **B. Emphasize these two points in advertisements** C. Reduce property prices D. Improve property quality		+1	+1	+1	3	1

No.	Assessment Program	Comment score			Sum of scores	IOC value
		+1	0	-1		
Analyzing						
8. Which of the following is NOT a key factor when assessing the potential for buying property in a region? A. Transportation convenience B. Nearby commercial facilities **C. Historic buildings** D. School district		+1	+1	+1	3	1
9. In analyzing the real estate marketing strategies of competitors, which item should not be overlooked? **A. Pricing strategy** B. Promotional activities C. Customer service D. Human resource management		+1	+1	+1	3	1
10. Which information is least relevant when analyzing a potential competitor for a new market entry? A. Their marketing strategy B. Their brand image **C. Their company history** D. Their product features		+1	+1	+1	3	1
Evaluating						
11. How do you evaluate the success of a real estate marketing strategy? **A. Number of sales** B. Customer satisfaction C. Advertising volume D. Construction cost		+1	+1	+1	3	1
12. Which metric should be the main focus when evaluating the effectiveness of a real estate marketing plan?		+1	+1	+1	3	1

No.	Assessment Program	Comment score			Sum of scores	IOC value
		+1	0	-1		
A. Number of likes on social media B. Number of times advertisements are run **C. Sales volume** D. Number of customer inquiries						
Creating						
13. In order to attract more buyers, what innovative offerings can real estate developers provide? **A. VR house demonstrations** B. Traditional advertising C. More agents D. Lower prices		+1	+1	+1	3	1
14. To enhance the appeal of a real estate project, what innovative strategy can a company adopt? A. Increase traditional advertising **B. Offer virtual house demonstrations** C. Lower prices D. Increase the number of agents		+1	+1	+1	3	1
Remembering						
15. List the three core components of real estate marketing planning.		+1	+1	+1	3	1
Understanding						
16. Explain why market research is important in real estate marketing planning.		+1	+1	+1	3	1

No.	Assessment Program	Comment score			Sum of scores	IOC value
		+1	0	-1		
Applying						
17. Suppose you are a real estate marketing planner, and you are now launching a new residential project targeting young families. Please describe your strategy.		+1	+1	+1	3	1
Analyzing						
18. How to use PEST analysis in real estate marketing planning.		+1	+1	+1	3	1
Evaluating						
19. Based on your experience, list three methods to evaluate the effectiveness of real estate marketing planning.		+1	+1	+1	3	1
Creating						
20. Imagine a unique social media marketing strategy for real estate.		+1	+1	+1	3	1

Table 4 The difficulty (P) and classification ability (R) of the learning achievement test for undergrad students

NO.	P-value	R-value	Conclude
1	0.635	0.560	Choose to use.
2	0.649	0.563	Choose to use.
3	0.667	0.631	Choose to use.
4	0.662	0.621	Choose to use.
5	0.679	0.579	Choose to use.
6	0.630	0.638	Choose to use.
7	0.690	0.612	Choose to use.
8	0.657	0.650	Choose to use.
9	0.642	0.598	Choose to use.
10	0.673	0.629	Choose to use.
11	0.646	0.597	Choose to use.
12	0.663	0.605	Choose to use.
13	0.636	0.565	Choose to use.
14	0.650	0.641	Choose to use.
15	0.681	0.623	Choose to use.
16	0.645	0.591	Choose to use.
17	0.689	0.632	Choose to use.
18	0.654	0.558	Choose to use.
19	0.670	0.661	Choose to use.
20	0.639	0.659	Choose to use.

Table 5.4 displays the difficulty values (P) and separability values (R). In the test of university students' learning achievement, the difficulty (P) ranged from 0.630 to 0.690, and the classification capability (R) ranged from 0.560 to 0.661. A good test should have a difficulty (P) between 0.20 and 0.80. A good test question should have a distinguishability (R) above 0.40. In this study, all 20 questions used in the researcher's research tool met the criteria, qualifying as high-quality test questions.

Table 5 Comparison of learning achievement before and after using Flipped Classroom Model to improve undergrad students ' learning achievement

Student id	Pre-School score (Pre-Test)	After school score (Post-Test)	Difference between points(D)
1	60	75	15
2	55	68	13
3	50	60	10
4	58	67	9
5	65	73	8
6	62	68	6
7	59	66	7
8	54	55	1
9	70	82	12
10	53	64	11
11	64	72	8
12	58	59	1
13	61	75	14
14	56	70	14
15	63	77	14
16	65	78	13
17	67	74	7
18	52	59	7
19	55	56	1
20	60	67	7

Student id	Pre-School score (Pre-Test)	After school score (Post-Test)	Difference between points(D)
21	63	69	6
22	64	65	1
23	59	70	11
24	68	80	12
25	62	72	10
26	60	63	3
27	67	69	2
28	54	65	11
29	58	60	2
30	55	68	13
$\overline{X}$	60	68	8

Using SPSS program for data analysis

descriptive statistics

	N statistic	Scope statistic	Minimum value statistic	Maximum value statistic	average value		Standard Deviation statistic	variance statistic
					statistic	Standard Error		
Pre-instruction	30	20	50	70	59.90	.935	5.122	26.231
Post-instruction	30	27.00	55.00	82.00	68.2000	1.26346	6.92024	47.890
Effective number of cases (in columns)	30	-	-	-	-	-	-	-

relevance

		Pre-instruction	Post-instructn
Pre-instruction	Pearson Correlation	1	.753**
	Sig. (bobtail)		.000
	Number of cases	30	30
Post-instruction	Pearson Correlation	.753**	1
	Sig. (bobtail)	.000	
	Number of cases	30	30

**. The correlation is significant at the 0.01 level (two-tailed).

paired-sample test (computing)

		(math.) pairing difference					t	(number of) degrees of freedom (physics)	Sig. (bobtail)
		average value	standard deviation	Standard Error Mean	Difference 95% confidence interval				
					lower limit	limit			
Pairing 1	Pre-instruction - Post-instruction	-8.30000	4.55730	.83204	-10.00172	-6.59828	-9.975	29	.000

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Remembering P	30	1.00	20.00	11.0000	5.85456
Understanding P	30	1.00	15.00	9.4667	4.58433
Applying P	30	1.00	15.00	8.4667	4.25671
Analyzing P	30	3.00	20.00	12.0000	4.96192
Evaluating P	30	1.00	15.00	9.0333	4.22214
Creating P	30	4.00	15.00	10.0000	3.31142
Remembering A	30	1.00	20.00	12.0000	5.25882
Understanding A	30	2.00	15.00	10.0000	4.24264
Applying A	30	1.00	15.00	9.9667	4.75237
Analyzing A	30	2.00	20.00	13.0000	5.94225
Evaluating A	30	1.00	15.00	10.9667	3.96087
Creating A	30	3.00	15.00	11.7667	3.32891

P means Pretest

A means Posttest

Appendix E

Certificate of English

BANSOMDEJCHAOPRAYA
RAJABHAT UNIVERSITY

This is to certify that

Ms. Shen Yan

Achieved BSRU English Proficiency Test (BSRU-TEP) level

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Appendix F

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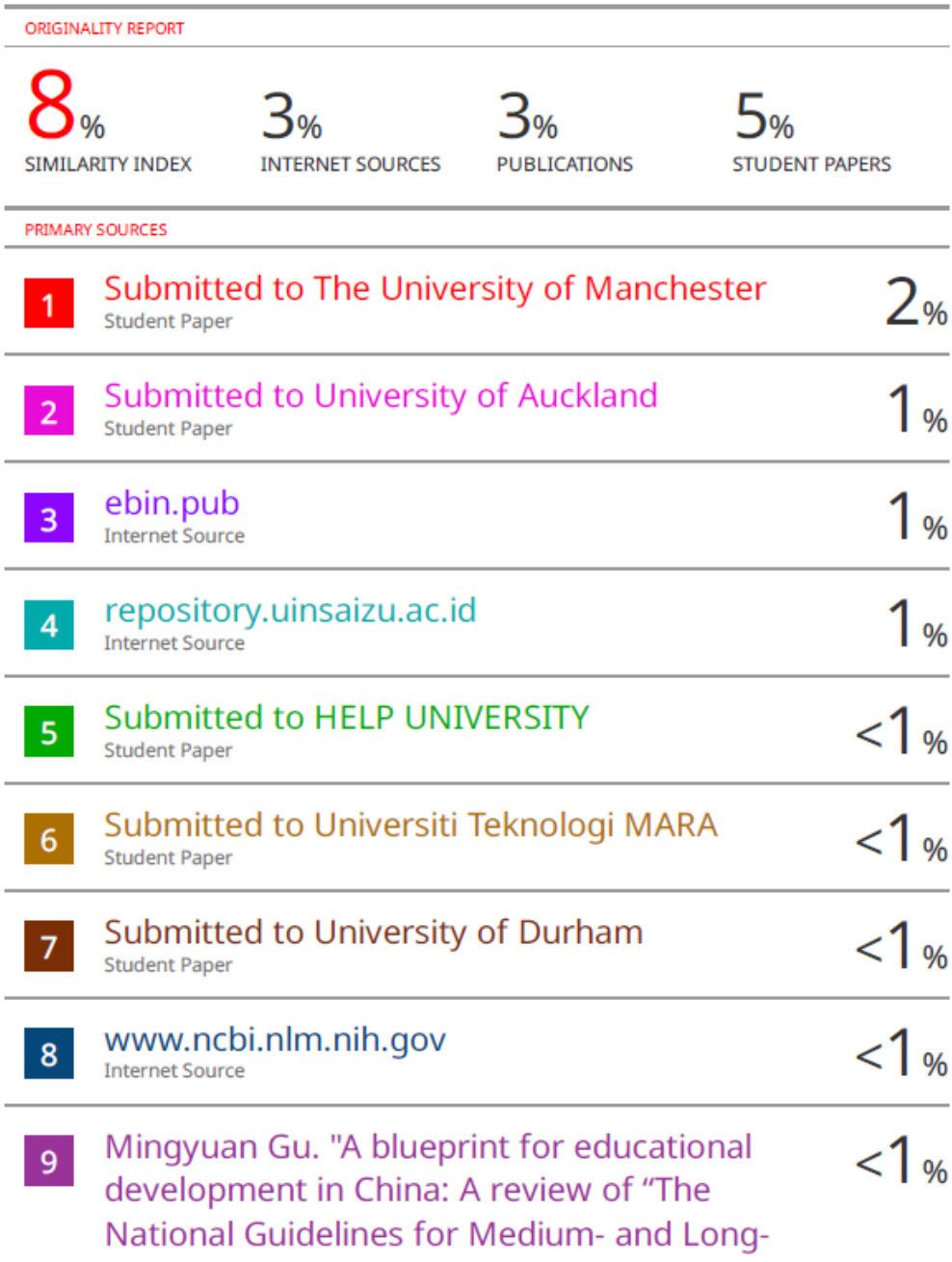
Chapter 1



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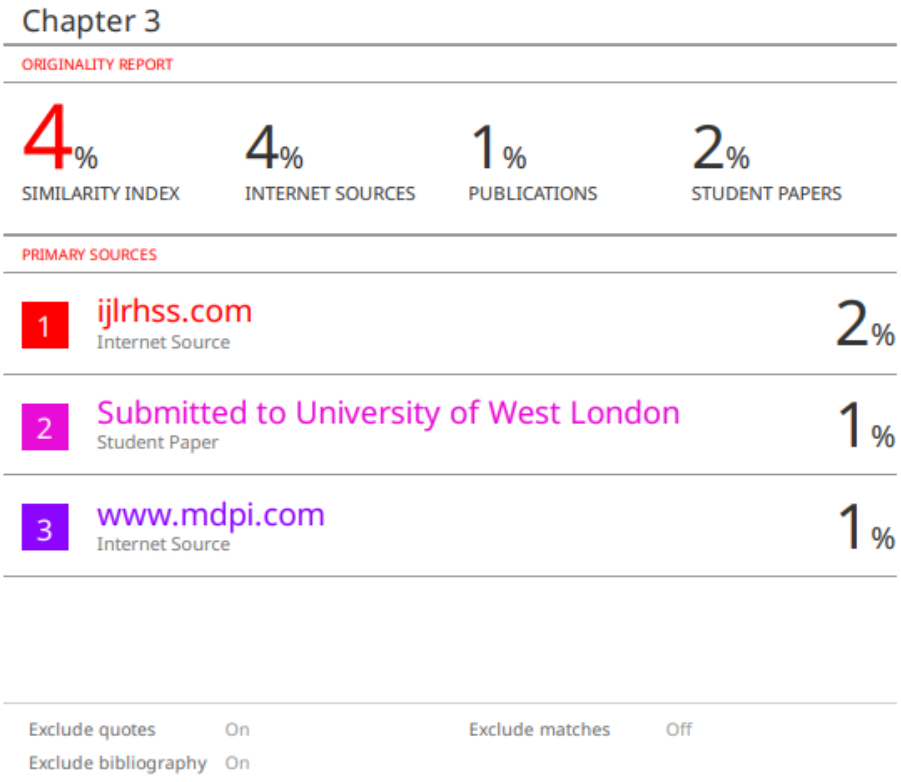

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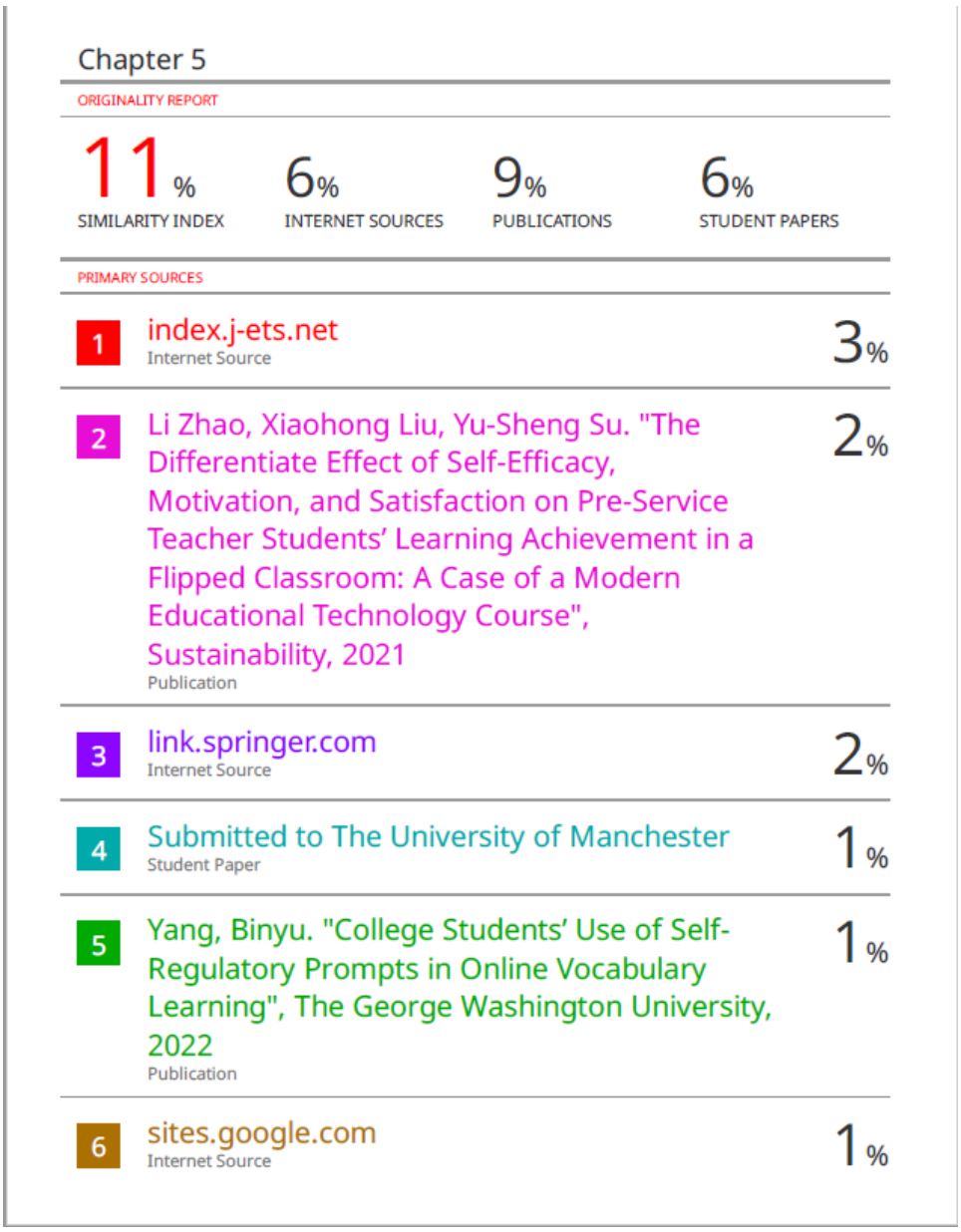

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The Development of Learning Achievement in Real Estate Marketing Planning Course Using Flipped Classroom Model of Undergraduate Students

Shen Yan[1] , Phatchareephorn Bangkhow[2], Phenporn Thongkamsuk[3]

[1,2,3]Faculty of Education, Bansomdejchaopraya Rajabhat University

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Abstract

The purposes of this study were 1) to develop of learning achievement in Real Estate Marketing Planning course using Flipped Classroom Model of undergraduate students and 2) to compare students' learning achievement before and after the implementation Flipped Classroom Model. The simple group of this study consisted of 30 samples from the third-year engineering management program undergrad education of Shanghai Sanda University. The research instruments included 1) lesson plans and 2) learning achievement test. The assessment questions aim to assess six sub-variables within learning achievement including: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating. The data were analyzed by mean, standard deviation and t-test for dependent sample.

The results revealed the followings:

1. The development of learning achievement in Real Estate Marketing Planning course using Flipped Classroom Model which includes five steps: 1) Pre-lesson Preparation, 2) Identify the problem, 3) independent exploration, 4) collaborative communication, 5) Presentation of Results. This method could improve undergraduate students' learning achievement in the Real Estate Marketing Planning course, achieving the research objective.

2. The comparing students' learning achievement before and after teaching with the flipped classroom model, the average score of undergraduate students in pre-class assessments was 60 of full score 100 , and in post-class assessments, it was 68. The post-class assessment scores were significantly higher than pre-class assessment scores at a statistical significance level of .01. This aligns with the research hypothesis.

KEYWORDS: Flipped Classroom Model, Learning achievement, Undergraduate students

1. Introduction

The "National Medium and Long-term Education Reform and Development Plan Outline (2010-2020)" proposes: to make reform and innovation the powerful driving force of education development. Currently, higher education is transitioning from a "teacher-centered" approach to a "student-centered" approach, shifting from a

"dual-master" learning model (where the teacher is the guide and the student is the main participant) to the mainstream direction of professional teaching. Around this transformation, higher education professional classroom teaching will also present a "flipped" trend (Bond, 2020) .

The existing "real estate marketing planning" course teaching, the continuation of the junior high school level "knowledge transfer-oriented" educational features, most of them are still confined to the traditional teaching model, ignoring the teaching mode and the sense of student experience and participation. In this one-way teacher-based teaching environment, students often do not take the initiative to think about the content of the class, and students must be synchronized in the classroom to receive knowledge. Teachers can't take into account the various levels of students, so it is easy to cause differences in the degree of absorption and understanding of students, in the process of practical training will often reveal more serious problems, such as the application of theory stuck in the textbook template, the lack of teamwork The teamwork lacks integrated thinking and so on. Therefore, the "real estate marketing planning" course teaching mode needs to be improved (Akçayır, 2018).

The flipped classroom is a teaching model established under the guidance of "learner-centered" education and "constructivist" theory, which has a relatively stable structure of teaching activities (Strelan, 2020). However, different scholars have proposed different models of flipped classroom teaching in different disciplines and teaching conditions (Galindo-Dominguez, 2021). The "flipped classroom" is a novel teaching tool in which the teacher uses technological resources to create instructional videos of what needs to be taught in the classroom and assign them to students before class. Students learn at their own pace according to their level, and the teacher and students discuss and solve problems with each other during class so that the teacher is no longer just the lecturer of knowledge and the "sage" on the podium. The teacher is no longer just the lecturer of knowledge and the "sage" on the podium; the students are no longer passive recipients of knowledge. The interaction and personalized contact time between students and teachers can be increased in this learning environment, which allows more students to individualize their learning and receive customized education (Hoshang, 2021).

Flipped classroom teaching provides rich learning resources for students' independent learning through micro-courses, and practical training teaching expands a new platform for students to practice theoretical knowledge. The Flipped classroom mode enhances the learning effect of college students in the Real Estate Marketing Planning course, is more conducive to carrying out the teaching practice of Real Estate Marketing Planning, exercises and cultivates students' marketing planning ability and collaboration ability, and is also of great significance to developing students' vocational ability.

2. Research Objective

1. To develop of learning achievement in Real Estate Marketing Planning course using Flipped Classroom Model of undergraduate students.

2. To compare students' learning achievement before and after the implementation Flipped Classroom Model.

3. Literature Review

3.1 Theory, Concept and Related Research

This the development of learning achievement in Real Estate Marketing Planning course using Flipped classroom model of undergraduate students the following literatures were studied:

Flipped classroom model

flipped classroom is a reversal of the traditional classroom teaching model, the reversal of the arrangement of knowledge transfer and knowledge internalization allows learners' independent learning, independent discussion, and teacher-student interaction to become the theme of the flipped classroom. Lin et al.(2022) propose that the flipped classroom instructional model reverses in-class teaching with at-home learning activities, with students learning new instructional content on their own time by watching lecture videos that instructors either pre-record or select from online sources and then engaging in instructor-facilitated, student-centered learning activities such as collaborative learning activities and problem-solving learning activities in class to cultivate higher levels of cognitive learning. Sun Yayun (2018) designed its Flipped classroom model by analyzing the theory and research related to flipped classroom and flipped classroom model, combined with the characteristics of experimental chemistry course. The experimental chemistry Flipped classroom model mainly contains three stages: pre-class knowledge transfer, classroom knowledge internalization and post-class knowledge consolidation and improvement. Ji Hui (2022) elaborates the teaching design of three stages, i.e., before, during and after class, from several perspectives of teaching objectives, contents and processes.

Flipped classroom mode is a kind of teaching mode that breaks through the time and space limitations of traditional classroom teaching to achieve the purpose of improving students' interest in learning, enhancing teacher-student interaction and communication, and revitalizing the classroom atmosphere, by releasing classroom time to gain a deeper understanding of the specific application of knowledge in practice, to achieve the improvement of teachers' performance of students, and then strengthen students' personalized learning, develop students' thinking, and cultivate students' learning ability, expression ability, and innovation ability. The following five teaching sessions are included: Pre-lesson Preparation, Identify the problem, independent exploration, collaborative communication, Presentation of Results.

Learning achievement

Min-Yu Xiao (2022) argues that in our school education, schools make summative evaluations of students according to certain regulations and teaching objectives, usually in the form of tests to observe students' mastery of knowledge and skills, which can visually reflect the strengths and weaknesses of students' stage of learning and school training programs, usually presented in the form of scores, which we call learning achievement. Learning achievement generally refers to the performance of cultural subjects other than music, physical education, and art. Ma Lili (2022) considers learning achievement as the knowledge and skills that students have acquired in school, through the study of certain courses and materials, usually represented by school test scores or by the scores obtained on academic tests. In this paper, learning achievement is defined in terms of students'

performance on regular assessment tests within school as operational. Learning achievement is subdivided into six sub-competencies. Anderson, Lorin W., and David R. Krathwohl, eds. (2001) :There are six levels of cognitive learning according to the revised version of Bloom's Taxonomy. Each level is conceptually different. The six levels are remembering, understanding, applying, analyzing, evaluating, and creating.

Learning achievement typically refers to the level of knowledge displayed by students in academic or educational activities. This is commonly assessed through exams, assignments, projects, oral presentations, etc., and manifested in the form of scores or grades. By observing students' mastery of knowledge, their performance at different stages of learning can be directly reflected. According to the viewpoint put forth by Anderson, Lorin W., and David R. Krathwohl in 2001, learning achievement is essentially the cognitive learning of knowledge. Based on the revised version of Bloom's Taxonomy, they subdivided the cognitive learning of knowledge into six distinct levels: remembering, understanding, applying, analyzing, evaluating, and creating. These levels are conceptually independent, representing a cognitive process that ranges from simple to complex.

3.2 Research Framework

The conceptual framework of the study, the development of learning achievement in real estate marketing planning course using flipped classroom model of undergraduate students, was as follows:

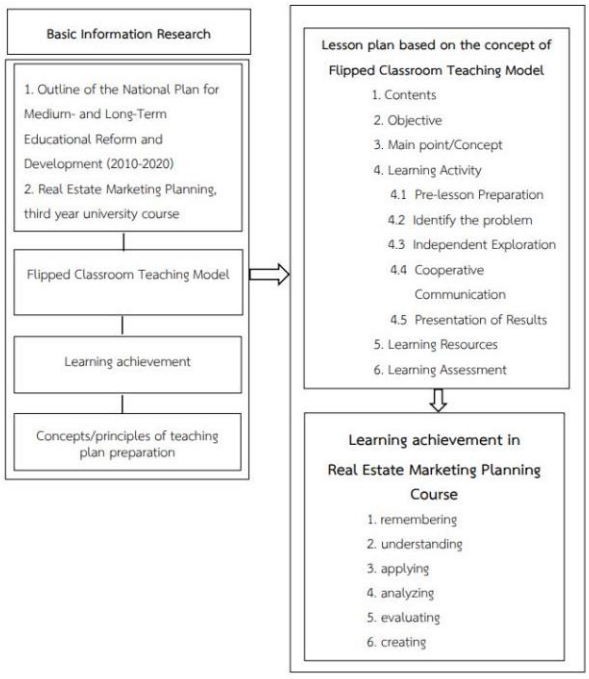

Figure 1 Research Framework

3.4 Research Hypotheses

After the implementation based on Flipped classroom model, the students' learning achievement has obviously improved.

4. Research Methodology

4.1 Research Design

The development of learning achievement in Real Estate Marketing Planning course using Flipped classroom model of undergraduate students the methodology of this research was research and development: 1) The development of the Teaching model based on Flipped classroom to improve the learning achievement in Real Estate Marketing Planning course of undergrad students. 2)To compare students' Learning achievement before and after the implementation base on Flipped classroom model.This research is experimental research. One group pretest – posttest design was used with the following experimental design:

4.2 Population and Sample

Population

There were 2 classes of 30 students each, totaling 60 third-year undergraduate students of Engineering Management Program of Shanghai Sanda University.

The Sample Group

Through cluster random sampling, 30 third-year of class 2 undergraduate students with mixed abilities (strong, medium, and weak) were from Engineering Management Program of Shanghai Shanda University.

4.3 Research Instrument

The development of learning achievement in Real Estate Marketing Planning course using Flipped classroom model of undergraduate students, the research Instruments were as follows:

1. Lesson plan according to the Flipped classroom model.
2. Learning achievement test.

Lesson plan according to the Flipped classroom model

The purpose of lesson plans was to improve the learning achievement by applying the Flipped classroom model that teaches in Real Estate Marketing Planning course. The lesson plan was divided into the following four learning units:

1. unit 1: General Introduction to Real Estate Marketing and Planning (3 hours)
2. unit 2: Core Marketing Theory and Techniques (3 hours)
3. unit 3: Real Estate Full Planning (3 hours)
4. unit 4: Real Estate Marketing Promotion (3 hours)

The development process of creating Lesson plan according to the Flipped classroom model and assessment form for validity of lesson plan were followed as.

1. Studying the principles of creating Lesson plan according to the Flipped classroom model and assessment form for validity of lesson plan from books, textbooks, articles, and related research.

2. Creating a Lesson plan according to the Flipped classroom model and assessment form for validity of lesson plan, 4 plans as this above.

3. Drafting the assessment form for validity of lesson plan at the end of each section, there was a space for experts to write suggestions that could be helpful in improving students' learning achievement.

4. Taking the instruments to 3 experts to verify the validity. The test consisted the index of items objective congruence (IOC) index of congruency was between 0.60-1.00, the level of consideration was as follows:

Rating was +1 There was an opinion that "Corresponds to definition/ measurement objectives."

Rating was 0 There was an opinion that "Not sure it corresponds to definition/measurement objectives."

Rating was -1 There was an opinion that "Inconsistent with definition/ measurement objectives."

5. Modifying assessment form for validity of lesson plan according to suggestion.

6. Taking the research instruments to collect data with the research samples.

Learning achievement test

In this research, the learning achievement was achievement of knowledge that divided into six sub-competencies, including: 1) Remembering 2) Understanding 3) Applying 4) Analyzing 5) Evaluating 6) Creating.

The test questions were designed for these six sub-competencies to assess students' learning achievement. The paper consists of 14 multiple-choice questions and 6 questions and answers, totaling 20 questions, with each question worth 5 points, for a total of 100 points.

The development process of creating learning achievement test and assessment form for validity of the test of learning achievement were followed as.

1. Studying the principles of the test of learning achievement and assessment form for validity of the test of learning achievement from books, textbooks, articles, and related research.

2. Creating learning achievement test and assessment form for validity of the test of learning achievement.

3. Taking the instruments to 3 experts to verify the content validity and index of items objective congruence (IOC) of the assessment form learning achievement test consistency the index of congruency was between 0.67-1.00.

4. Modifying assessment form for validity of lesson plan according to suggestion.

5. Taking research instrument to learning achievement test and the result of reliability was 0.96.

6. Taking the research instruments to collect data with the research samples.

4.4 Data Collection

In this research, the data collection period was used for the first semester of the 2023 academic year from October 23, 2023 to November 3, 2023, total of 12 hours. Follow the steps as follows.

1. This research is experimental research. One Group Pretest – Posttest Design was used with the following experimental design:

Table 1 Experimental design

Group	Pretest	Experimental	Posttest
E	T_1	X	T_2

The meaning of the symbols used in the experimental design.

E means Random Sampling

X means experimental

T_1 means Pretest

T_2 means Posttest

2. Taking Learning achievement test to obtained from the analysis, the difficulty value, Discriminant power, and reliability value. Then it was tested before class with the 30 students that were not research samples, these results of the difficulty value was ranged from 0.63 to 0.69, Discriminant power was ranged from 0.560 to 0.661, and reliability value was 0.96, then learning achievement test was improved.

3. Teaching according to lesson Plans that using Flipped classroom model to improve learning achievement. Organized teaching by the researcher about 6 hours per week, total 12 hours.

4. After completing the teaching, teacher conducted with using the same test of learning achievement to students. The scores obtained from the test were recorded to compare the learning achievement of students before and after learning.

5. Getting data obtained from teaching activities according to using Flipped classroom model to analyze the data according to statistical methods.

4.5 Data Analysis

1. Analyze of verified the validity of Real Estate Marketing Planning course based on Flipped classroom model and learning achievement test Use the index of consistency as a criterion for consideration standard (Index of item Objective Consistency: IOC).

2. Quantitative data were analyzed through descriptive statistics; means ($\overline{X}$), and standard deviation (SD.).

3. Quantitative data were analyzed through inferential statistics; Then calculate the different score of learning achievement before and after using Flipped classroom model were analyzed through t – test for dependent sample.

5. Research Findings

This study concluded through experimental design that the learning achievement based on the Flipped classroom model is reasonable and effective, and the following conclusions were drawn:

Table 2 Comparison of learning achievement before and after class by implementing the Flipped classroom model

Learning achievement	n	Full Scores	Pre-test		Post-test		D
			$\overline{X}$	SD.	$\overline{X}$	SD.	
1. Remembering	30	20	11.00	5.85	12	5.26	1.00
2. Understanding	30	15	9.50	4.58	10	4.24	0.50
3. Applying	30	15	8.50	4.26	10	4.75	1.50
4. Analyzing	30	20	12.00	4.96	13	5.94	1.00
5. Evaluating	30	15	9.00	4.22	11	3.96	2.00
6. Creating	30	15	10.00	3.31	11.8	3.33	1.80
total		100	60	5.12	68	6.92	8

As could be seen from Table 4.1, the changes in the scores of six sub-abilities of undergraduate students using the flipped classroom teaching method were as follows: 1) Remembering: The average score before learning was 11 points, and the average score after learning was 12 points, with an average difference of 1 point. 2) Understanding: The average score before learning was 9.5 points, and the average score after learning was 10 points, with an average difference of 0.5 points. 3) Applying: The average score before learning was 8.5 points, and the average score after learning was 10 points, with an average difference of 1.5 points. 4) Analyzing: The average score before learning was 12 points, and the average score after learning was 13 points, with an average difference of 1 point. 5) Evaluating: The average score before learning was 9 points, and the average score after learning was 11 points, with an average difference of 2 points. 6) Creating: The average score before learning was 10 points, and the average score after learning was 11.8 points, with an average difference of 1.8 points. After learning, the scores for each item were higher than before learning. Therefore, adopting flipped classroom teaching could improve the learning achievement of undergraduate students, achieving the research objective.

Table 3 Comparison of learning achievement before and after class by implementing the flipped classroom teaching method

Learning achievement		n	Full Point	$\bar{X}$	SD.	t	p
Total score	Pre-test	30	100	60	5.12	9.96**	.00
	Post-test	30	100	68	6.92		

**Statistically significant at level .01 ($p < .01$)

From Table 4.2, it could be observed that the students' post-learning scores were higher than their pre-learning scores, which was statistically significant at the 0.01 level. The average score of students before employing the flipped classroom teaching method was 60 points, and after the implementation, it increased to an average of 68 points, with an average difference of 8 points. The results indicate that after adopting the flipped classroom teaching method, students' learning achievement has improved compared to before. The findings were statistically significant.

6. Discussion

Research on development of learning achievement in Real Estate Marketing Planning course using Flipped classroom model of undergraduate students was conducted in the first semester of the 2023 academic year. It involved the study of academic performance cultivation for 30 undergraduate students in Grade 3, Class 2 of the Engineering Management program at Shanghai Sanda University using the flipped classroom teaching model. This research can be discussed from two aspects:

1. The development of learning achievement in Real Estate Marketing Planning course using Flipped classroom model of undergraduate students, the researchers divided the lesson plan writing into five steps according to the flipped classroom teaching model: 1) Pre-lesson Preparation, 2) Identify the problem, 3) independent exploration, 4) collaborative communication, 5) Presentation of Results. The assessment of learning achievement performance was tested through six sub-skills: 1) Remembering, 2) Understanding, 3) Applying, 4) Analyzing, 5) Evaluating, 6) Creating. Data analysis was conducted by three experts who evaluated the quality of lesson plans based on the flipped classroom teaching model, with the results presented by experts evaluating the lesson plan quality. Using the flipped classroom model to improve learning achievement was necessary. Under this teaching model, students become the main body of learning, with teachers acting as guides and helpers. Through mutual assistance and cooperation, this model was conducive to students mastering knowledge, enhancing learning enthusiasm, and thereby improving each student's learning achievement. This was consistent with Tian Ke's (2022) who conducted the research on the application of flipped classroom in high school language reading teaching. His research findings, which suggest that the flipped classroom could be conducive to students mastering knowledge, enhancing learning enthusiasm, and thereby improving each student's learning

achievement and truly reflect the student's principal position. In traditional classrooms, students passively receive knowledge, not fully reflecting their principal position, so students with poor self-control often cannot concentrate and learn efficiently. In contrast, in the flipped classroom, students can pause or speed up the lessons as per their individual needs during the pre-class autonomous learning, truly meeting the needs of students at different levels. In class, students shift from being mere receivers and listeners to participants and speakers. In-class exploratory learning promotes 'deep dialogue' between teachers and students and among students themselves, strengthens one-to-one guidance by teachers in class, and enables teachers to focus on individual students. The process of inquiry helps students understand texts more deeply, truly learn to analyze texts, and apply what they have learned when solving problems. The transformation of classroom roles stimulates students' enthusiasm for active learning and sharing, making the classroom atmosphere more lively and the teaching effect more pronounced. Moreover, the findings was consistent with Dominguez (2021) who conducted the research on Flipped classroom in the educational system: Trend or effective pedagogical model compared to other methodologies. This research found that the flipped classroom method was more effective in terms of Learning performance than other methods. In secondary and higher education, it may be more beneficial for other constructs, such as motivation, self-efficacy, cooperativeness, and participation. And there are similar findings to Xiao Wenyu's (2022) who conducted the research on Analysis of the correlation between physical education activities at home for lower grade primary school students and changes in academic performance. His research also confirmed the results of this study. Xiao Wenyu believes that flipped learning involves transferring lecture time to the pre-class stage, allowing students to conduct study and research related to the course before class, thereby having more time for classroom practice. In the classroom, students come with questions for the teacher, who answers them in class, allowing students more time to practice under the teacher's guidance. Based on this, the researchers proposed a self-regulated flipped learning method to guide students in setting learning goals and supporting them in monitoring their learning status across five stages. Additionally, an experiment was conducted in a professional training program to examine the effectiveness of the proposed method. The experimental results showed that this method significantly improved students' academic performance, self-efficacy, self-regulation skills, and critical thinking abilities, which in turn facilitated the improvement of their grades. In addition to this, Lu, D., & Tan, Y. (2021) who conducted the research on the impact of flipped classroom on the learning effectiveness of vocational college students: Evidence from a meta-analysis based on a random effects model., his research also confirmed the results of this study. They conducted a meta-analysis of 28 experimental and quasi-experimental studies, which showed that flipped classrooms effectively improve college students' learning achievement; moreover, the subject werea, class size, experiment duration, and type of knowledge all have varying degrees of moderating effects on flipped classrooms. The teaching process of the Flipped classroom model generally includes five steps. With the continuous advancement of new curriculum reforms, the theoretical and practical research on teaching models was also showing a booming trend. To meet the talent training requirements of the new era, advocating the Flipped

classroom model was given significant importance. Different literature further elaborates on the development and implementation of the flipped classroom teaching model.

2. The Comparison of students' learning achievement before and after the implementation flipped classroom teaching model. Researchers studied many literatures and research related to the Flipped classroom model and conducted research based on the undergraduate flipped classroom teaching model. According to the research results, adopting the Flipped classroom model can promote undergraduate to improve their learning achievement in the Real Estate Marketing Planning course. The results showed that the average score before learning was 60 points, and the average score after learning was 68 points, with an average difference of 8 points. The results show that, the average score of undergraduate students in pre-class assessments was 60 (SD = 5.12), and in post-class assessments, it was 68 (SD = 6.92). The post-class assessment scores were significantly higher than pre-class assessment scores at a statistical significance level of 0.01. This aligns with the research hypothesis. The finding was consistent with Ding Yinyin (2021) who conducted the research on A meta-analysis of the impact of flipped classroom on higher education students' academic performance. Ding Yinyin believes that the flipped teaching model significantly improves the post-lesson assessment scores of vocational college students compared to their pre-lesson scores, with a statistical significance level of 0.01. This indicates that compared to traditional teaching models, students can achieve better learning outcomes and higher exam scores in a flipped classroom setting. Moreover, the findings was consistent with Chen Wenhao et al.'s (2021) who conducted the research on the effect of flipped classroom on academic achievement in primary and secondary schools, their research also verified the results of this study. Chen Wenhao and others believe in the impact effect on students' learning achievement. The main effect size of the flipped classroom was 0.44, with a 95% confidence interval of 0.32 to 0.57. According to Cohen's classification suggestions, when the effect size was less than 0.2, it was a slight impact; an effect size between 0.2 and 0.5 was a moderate impact; and an effect size of 0.8 or higher was a highly significant impact. Therefore, the impact of the flipped classroom on learning achievement was moderate. The two-tailed test of the main effect size $Z=6.92$ ($P<0.001$) reached a statistically significant level, indicating that using the flipped classroom teaching can effectively improve students' learning achievement. The Flipped classroom model was a breakthrough from the traditional classroom teaching's time and space limitations, by releasing classroom time for in-depth understanding of the practical application of knowledge, to achieve an improved understanding of students by teachers. The results show that using flipped classroom teaching can improve undergraduates' learning achievement, achieving the research objective.

7. Suggestion

1. Beyond the course Real Estate Marketing Planning, future research could explore the effectiveness of the flipped classroom model in other disciplines to see if it's equally effective.

2. While this study has demonstrated that the flipped classroom model can improve students' learning achievement, further research was needed to investigate the long-term effects of this model on students' overall learning outcomes and career development.

3. In the future, consideration can be given to combining the flipped classroom with other teaching methods, such as a blend of online and offline learning, to determine which combination yields the best learning outcomes.

4. It's worth exploring how different student traits (like learning styles, cognitive abilities, etc.) impact the outcomes of the flipped classroom, in order to provide more personalized teaching recommendations.

5. Research the long-term effects of flipped classroom on student learning outcomes, including knowledge acquisition, skill development, and attitude changes.

8. Acknowledgement

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