THE INFLUENCING FACTORS OF FLIPPED CLASSROOM TEACHING MODE ON CLASS PARTICIPATION OF LOGISTICS MANAGEMENT MAJORS: A CASE STUDY OF TEACHING FORKLIFT SKILLS IN NANJING COMMERCIAL COLLEGE

CHEN SI
6417195831

AN INDEPENDENT STUDY SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR
THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION
GRADUATE COLLEGE OF BUSINESS
SIAM UNIVERSITY
2023

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This Independent Study has been Approved as a Partial Fulfillment of the Requirement of International Master of Business Administration

Advisor: ..... Chen Qiu

(Assoc. Prof. Dr. Qiu Chao)

Date: ..... 9 /..... 4 ..... /..... 2024 .....

.....

(Associate Professor Dr. Jomphong Mongkhonvanit)
Dean, Graduate School of Business Administration

Date ..... 24 /..... 9 /..... 2024 .....
Siam University, Bangkok, Thailand

Title: The Influencing Factors of Flipped Classroom Teaching Mode on Class Participation of Logistics Management Majors: A Case Study of Teaching Forklift Skills in Nanjing Commercial College

By: CHEN SI

Degree: Master of Business Administration

Major: Education Management

Advisor: .....Chen Qiu.....

(Assoc. Prof. Dr. Qiu Chao)

.....9...../.....4...../.....2024.....

ABSTRACT

With the development of information technology, the flipped classroom teaching model has gradually become the leader of new teaching methods in today's education world. The flipped classroom teaching mode has changed the process of traditional classroom teaching and created a huge wave in the education world, and it is gradually accepted by many frontline teachers and applied in daily teaching.

The objectives of this paper were: 1) To examine the effect of classroom questioning on student engagement in a classroom teaching forklift skills in logistics management under the flipped classroom teaching model; 2)To examine the effect of group discussion on student engagement in a classroom teaching forklift skills in logistics management under the flipped classroom teaching model; 3) To examine the effect of self-study before class on student engagement in a classroom teaching forklift skills in logistics management under the flipped classroom teaching model; 4)
To examine the effect of learning interest on student engagement in a classroom teaching forklift skills in logistics management under the flipped classroom teaching model.

This paper adopted the quantitative research method. It was based on the humanistic theory and constructivist theory on classroom engagement under the flipped classroom teaching mode and puts forward four hypothesized factors, namely, classroom questioning, group discussion, self-study before class, and learning interest. A questionnaire survey was conducted on 403 students teaching forklift skills in logistics management at Nanjing Commercial School. The sample data were statistically analyzed on reliability, validity, and multiple regression using SPSS.

The paper found that:1)In the flipped classroom teaching model, classroom questioning significantly positively affects classroom participation of students teaching forklift skills in logistics management; 2) In the flipped classroom teaching model, group discussion significantly positively affects classroom participation of students teaching forklift skills in logistics management; 3) In the flipped classroom teaching model, self-study before class significantly positively affects classroom participation of

students teaching forklift skills in logistics management; 4) In the flipped classroom teaching model, learning interest significantly positively affects classroom participation of students teaching forklift skills in logistics management.

The conclusion is that, the flipped classroom has a positive effect on classroom participation of logistics management students by improving effective classroom questioning, reasonable grouping for group discussion, developing good habits of self-study before class, appropriately stimulating students' interest in learning, realising that the learner has become the centre of learning, and improving the way of communication between the teacher and the students.

Keywords: flipped classroom, logistics management program, classroom participation, influencing factors

ACKNOWLEDGEMENTS

I would like to express my deepest gratitude to my advisor, for his invaluable guidance, support, and encouragement throughout my master's thesis research. His insightful comments and constructive criticism have significantly improved the quality of my work.

Additionally, I am grateful to Associate Professor Dr. Jomphong Mongkhonvanit, the Dean of the Graduate School, for his support and encouragement throughout my studies. His dedication to the graduate program and commitment to excellence have inspired me to strive for academic excellence.

Finally, I would like to extend my appreciation to all the faculty members and staff of the Siam University who have contributed to my growth and development as a scholar. Their unwavering support and encouragement have been a source of inspiration and motivation to me.

Declaration

I, Chen si, hereby certify that the work embodied in this independent study entitled "Research on the influence factors of flipped classroom teaching mode on the class participation of logistics management majors-taking the teaching of forklift skills in NANJING COMMERCIAL COLLEGE as an example" is result of original research and has not been submitted for a higher degree to any other university or institution.

Chen Si

(CHEN SI)

Jul 20, 2023

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Chapter 1 Introduction

1.1 Background of the study

Under the trend of rapid development of science and technology, informatization, and globalization, the shaping of an innovative spirit and the cultivation of innovative talents have become the most urgent needs of the whole society at present. The traditional classroom teaching mode must find a way to meet the social demand for innovative talents. The new curriculum reform proposes actively cultivating students' abilities in active participation, willingness to research, active communication, and cooperation. Therefore, education cannot be limited to the traditional teaching mode but should strive to explore innovative teaching methods and improve students' participation in the classroom (Liu, 2021).

Improving classroom participation is in line with the needs of modern education development. In the traditional classroom, the teacher is the main body of teaching, and students do not play the initiative. Learning tends to be passive acceptance, greatly reducing students' interest and initiative in learning. Contemporary college students are quite mature in intellectual development and can solve problems alone in the classroom (Chang, 2021). They are eager to express their demands and ideas. Flipped classroom teaching mode is a product of the development of Internet information technology, "online + offline" teaching mode is the combination of education and the Internet, breaking the restrictions of time and space. The emergence of the flipped classroom provides students with a good learning and communication platform, from "teacher-centered" to "student-centered" change. The emergence of the teaching mode of flipped classroom has brought new vitality to the traditional classroom. At the same time, the flipped classroom teaching mode gives students a more personalized learning experience (Zhang, 2018). The teaching mode of flipped classroom is conducive to cultivating students' independent problem-solving abilities and improving students' ability of solidarity and mutual help. Logistics management majors focus on practical operation, and talent cultivation emphasizes participation in classroom activities. Innovative thinking and practical ability are important contents of talent cultivation for logistics management majors (Ngo & Phan, 2019). Flipped classroom teaching mode fits the goal of talent cultivation for logistics management majors.

Nanjing Commercial College is a brand school of innovative management in China and one of the top ten innovative schools in China in the new century. The training base of its logistics program has been named as "Jiangsu Province High-level Demonstration Training Base". Its logistics specialty has achieved excellent results, and has excelled in national and provincial vocational skills competitions, among which the forklift skills program has won national gold medals for many times. Therefore, the teaching of forklift skills in the logistics management specialty of the school is in the leading position in the vocational education of Jiangsu Province and also has a certain status in the country.

1.2 Problems of the study

The traditional teaching mode is teacher-oriented, and most of the time, in the classroom, the teacher demonstrates teaching and guiding students to learn. At the same time, students' experiential learning needs to be improved (Treleven et al., 2014; Worthen, 2008), learning initiative and participation are reduced. Eventually, students' interest in professional learning decreases, professional skills learning needs to be in place, and they cannot become qualified logistics management talents. At present, the flipped classroom teaching mode is a product of the development of Internet information technology (Rui et al., 2017). Realize the combination of the flipped classroom and logistics management professional training, and promote the development of logistics management professional teaching. What needs to be studied is the effect and influencing factors of applying the flipped classroom teaching mode to cultivate logistics management professional skills and technology.

Forklift skills learning is mandatory for logistics students, and practical teaching is often dynamic and complex (Ying, 2017). Teachers need to repeat multi-angle demonstrations when teaching. It cannot be fixed action, so in many logistics, teaching is used in the flipped classroom teaching method and achieved initial results (Du, 2018). The student's classroom participation has improved after using the flipped classroom teaching method in actual teaching, but it still cannot reach the ideal effect. The interest in professional learning is reduced; professional skills learning needs to be in place, and they cannot become qualified logistics management personnel (He, 2020). What is urgently needed is to study which factors will affect students' participation. Therefore, this paper investigates and analyzes the forklift skills teaching classrooms in logistics management.

1.3 Objectives of the study

Flipped classroom teaching mode is widely used in the process of talent cultivation. The application of flipped classroom teaching mode in the teaching of forklift technology for logistics management majors has achieved good results. However, there is a lack of research on classroom participation in the flipped classroom teaching mode (Wang, 2020). The study will build an efficient teaching mode system, which can provide theoretical support for improving teachers' teaching effect, students' learning performance, learning interest, and self-learning ability. The main research objectives are:

1) To examine the effect of classroom questioning on student engagement in a classroom teaching forklift skills in logistics management under the flipped classroom teaching model.

2) To examine the effect of group discussion on student engagement in a classroom teaching forklift skills in logistics management under the flipped classroom teaching model.

3) To examine the effect of self-study before class on student engagement in a

classroom teaching forklift skills in logistics management under the flipped classroom teaching model.

4) To examine the effect of learning interest on student engagement in a classroom teaching forklift skills in logistics management under the flipped classroom teaching model.

1.4 Scope of the study

The scope of the study is the logistics management program of Nanjing Commercial College. This paper takes the logistics management students central in Nanjing Commercial College as the research object. The research subjects must satisfy having studied the course "Forklift Skills" in the logistics management major. At the same time, the research subjects must have participated in the flipped classroom learning mode. Students of other majors in Nanjing Commercial College are not taken as the scope of the study. The research survey includes students' gender, grade level, classroom questioning, group discussion, self-study before class, learning interest, and classroom participation.

1.5 Significance of the study

There needs to be more research on classroom participation in the flipped classroom environment, and there are fewer studies on classroom participation for logistics management majors. This study uses a questionnaire survey to obtain first-hand information on the classroom engagement of students in forklift skills class of logistics management majors in a flipped classroom environment to provide a favorable scientific basis for improving the classroom engagement of students in the flipped classroom teaching mode (Ma & Guo, 2019), and to promote the study of student engagement in the flipped classroom. On the one hand, it can enrich the research content of "flipped classroom" and compensate for the lack of research literature (Yin & Liu, 2017). On the other hand, it can help enrich the relevant teaching theory system and provide some theoretical guidance for developing professional teaching programs.

The study of the influence factors of the flipped classroom can effectively enhance the level of learning interaction between teachers and students. It can provide more practical operational suggestions for the logistics management profession (Han & Lee, 2016). At the same time, it can also improve the teaching effect of teachers and students' learning effect in an effective way. It helps increase students' interest in learning and self-learning ability (Zhu, 2017). It helps teachers consider the individual differences between students in teaching. It helps teachers to switch between teaching modes in different teaching situations. It helps students change from passive learning to active learning. The use and development of flipped classroom teaching is of great practical significance.

Chapter 2 Literature Review

2.1 Introduction

The literature review of this study is based on the constructive learning theory and individualism learning theory. It discusses the concepts and characteristics of flipped classroom teaching, classroom engagement, and the factors affecting classroom engagement. The literature review clarifies what factors influence students' classroom engagement in the flipped classroom. Based on the analysis and related research findings, a conceptual model of this study is constructed to determine the relationship between each variable.

2.2 Literature Review

2.2.1 Concept of Flipped Classroom

The flipped classroom is a new teaching mode presented in the advanced information technology development environment, where the learning resources provided by teachers to students are no longer traditional lesson preparation but novel resources based on teaching videos. Before the class, students have completed the learning and practicing of teaching videos and other learning resources, which can be carried out between teachers and students in the classroom (Wu & Wang, 2021). As a new teaching mode, the flipped classroom has changed the roles of teachers and students in the traditional classroom. Students have become the main body of active learning from the previous passive learning, while teachers have become the role of assisting students in their learning (Heitz et al., 2015; Kaushal et al. et al., 2016). The flipped classroom has also changed the teaching and learning process in the traditional classroom; students can learn independently through open network resources and teachers' self-made video courses (Singh et al., 2018). The flipped classroom has put the teaching part outside the classroom time, and the time in the classroom is mainly for teachers to help students to practice the course, answer questions and solve puzzles, which increases the time for students to participate in classroom activities actively (Zhang & Wang, 2017).

The flipped classroom is different from the traditional classroom in that its realization requires teachers to make the courseware needed in the classroom before the class and then upload it to the Internet after perfecting it so that students can learn with the support of cutting-edge information technology (Mohan, 2018). Unlike the traditional classroom, students can use high-quality online teaching resources to obtain new content to complete the knowledge transfer process in the pre-course preparation. In contrast, the classroom becomes an interactive place between teachers and students. The reason why this way can be popularized mainly relies on the development of Internet technology and computer technology in the field of education, widely used, and favorably cut down the impact of some objective factors on the learners, breaking the traditional teaching methods of learning time and space limitations, it can provide learners with high-quality learning materials all the time. With the support of

technology, knowledge has moved towards an era full of information exchange and total circulation (Wallace, 2014).

(1) Student-centered mobilization of cooperative inquiry among learners

The teaching mode of flipped classroom creates an active learning environment for students. Using the courseware made by the teacher before class, uploading the course content video resources to the network, and saving them, students can reasonably arrange their own learning progress and learning place according to their own time (Xiao et al., 2021) to obtain a relaxed learning atmosphere, and then do not have to worry about missing the content of the teacher's explanations because of their physical discomfort or classroom distraction, participating in other extracurricular activities, and in the process of watching the video course, they can entirely according to their views on the content of the lecture. While watching the video course, you can repeat the audio-visual and adjust the pace of learning according to your own degree of acceptance of the lecture's content (Hatmanti & Septianingrum, 2020). In learning, students can mark the confusing points and ask the teacher or classmates to discuss them. Flipping gives students more time to thoroughly discuss, communicate, and cooperate so that students can learn in cooperation and complete the tasks assigned in class (Minaz et al., 2018). Teachers can divide students into collaborative groups to cooperate, complete learning tasks in cooperative learning, and cultivate the spirit of mutual help and cooperation among students.

(2) Comprehensive teaching resources

The flipped classroom will be scattered teaching resources through information technology and video production methods for integration, teaching materials through video, images, audio, graphics, and other ways to present, and no longer stick to simple numbers and words, thus effectively breaking the characteristics of the traditional classroom teaching resources singularity, but also reflects the advantages of resource integration in the flipped classroom (Pinker & Prince, 1988). Furthermore, the flipped classroom has the characteristics of comprehensiveness, such as optimizing the quality of resources and expanding the quantity of resources. In this way, the teaching subject has a broader space and richer resources (Mandelbrot & Van Ness, 1968).

(3) Interactive communication between teachers and students gradually increases

In the flipped classroom teaching mode, students are given more space for choice, and they can go through the online teaching videos to complete the learning content before class. With sufficient learning before class, teachers and students will have more time for teacher-student or group discussion in the classroom, and teachers can give specific guidance to students according to the discussion and communication in the classroom. Flipped classroom makes the roles of teachers and learners change, students become the main body of learning,

and teachers become the guide in learning.

(4) Uniqueness and effectiveness of teaching carrier

Teaching carrier refers to the carrier used to store and carry teaching information in teaching interactive activities, and it is the combination form and shape of teaching content prepared by teachers to achieve certain teaching goals and deliver teaching content. Flipped classroom breaks the limitations of the traditional classroom which takes language, text and teaching materials as the main carriers, and is characterized by the innovativeness of teaching carriers (Ely & Thomas, 2001). Flipped classroom is supported by information technology and micro-video, which is no longer subject to the time and space limitations of teaching, and improves the efficiency of teaching and realizes the recycling of teaching resources at the same time (Matthews, 1999). Secondly, three-dimensionality is also the characteristic of flipped classroom in terms of teaching carrier. Flipped classroom through the micro-video media for knowledge dissemination, and through real-time feedback, to realize the interaction between teachers and students to promote common development and thus create conditions for inquiry-based learning.

(5) Flexible and controllable teaching process

The teaching process involves carrying out, discovering, and changing teaching activities and comprises "teaching" and "learning." Flipped classroom fully reflects the autonomy of the teaching process, and students can make independent choices, independent learning, self-evaluation, and self-supervision in terms of their learning progress, acceptance level, existing knowledge level, and learning videos (Hancock & Schoonen, 2015). The flipped classroom can adapt to various changes in the teaching process, reflecting the flexibility of the flipped classroom in the time of "teaching" and "learning." In the whole teaching process or some teaching phases, the flipped classroom reflects the controllability feature, in which the teaching subject can control the teaching and its progress. This controllability can promote the development of the teaching subjects and is also conducive to the smooth implementation of teaching activities.

2.2.2 Connotation of Classroom Participation

"Classroom participation" refers to the degree of students' active participation in the teaching process, divided into the degree of overall student participation and individual student participation. Among them, the number of students participating, participation attitude, participation mode, participation depth, participation effect, and other aspects are indicators of classroom teaching (Kraftl, 2013). Since the 1990s, the whole education world has begun to pay attention to students as the main body of learning, and students' knowledge has been effectively improved, and their learning styles have been transformed (Cicmil & Hodgson, 2006). At the same time, many researchers began to emphasize the role of students'

classroom engagement. Classroom engagement refers to the number or proportion of students who can independently and innovatively complete and achieve multiple teaching objectives in classroom teaching, and students can also make more significant progress in learning ability and knowledge acquisition (Jackson, 2018). Classroom engagement has three dimensions: behavioral, cognitive, and affective engagement. Another part of scholars also believes that classroom engagement refers to the degree of students' initiative and motivation in the teaching and learning process. They take the time to participate in the teaching and learning process, and the number of students participation in the classroom teaching and speaking is the indicator of engagement. On the other hand, some scholars focus mainly on students' attitudes toward participation in classroom teaching and so define classroom engagement narrowly as attitudes toward participation (Cui & Yu, 2019).

2.2.3 Individualism Learning Theory

(1) The concept of individualism learning theory

Individualism learning theory promotes a meaningful view of free learning and meaningful learning content. It emphasizes human responsibility, immediate feelings, and individual growth. It takes cultivating students' "complete personality" as the starting point. It pays attention to the student's mastery of theoretical achievements while paying more attention to the overall development of students (Deci & Ryan, 1985). The theory emphasizes that the primary task of education is to pay attention to the development and progress of individual students and to help them achieve "self-actualization." The individualist view of teaching believes that students have the potential to learn, and the facilitator only needs to set up a good learning environment for them, provide various learning resources, make them know how to learn, and let students decide how to learn (Deci & Ryan, 1985).

Therefore, the teacher's task is not to teach students directly but to create a variety of learning resources for students, provide an atmosphere that promotes learning, mobilize all students as much as possible to participate in classroom learning activities, encourage students to share their learning experiences and feelings and increase their understanding and acceptance of themselves and others (Leipzig et al., 2021). Teachers in the teaching process, from the perspective of students, according to the specific situation of student learning, should be to develop students' independent learning ability as the focus, the students in the learning process of emotional experience and cognition, set as the teacher's teaching basis (Moraros et al., 2015). Teachers only as a facilitator in the teaching process control the teaching process and promote the overall development of students (Deci & Ryan, 1985). Teachers will screen the teaching video resources uploaded to the online network platform so that students learn independently, offline teachers in the classroom, for targeted teaching guidance, play the role of learning facilitator, highlighting the role of the main body of the students so that students explore learning, respect for the ideas of the students, personality development. Maximize

stimulating students' learning potential (Chen et al., 2017).

(2) The Classroom questioning in the Flipped Classroom Teaching Model under the individualism learning theory

In the teaching activities of the flipped classroom, the teacher carries out classroom questioning is not just an isolated question but generally has articulation, and the questions are continuous and progressive with each other (Hake, 1998). The questions in classroom questioning in the teaching activities are all complementary and interact with each other. When teachers ask questions, they should consider not only the quality of the questions but also the order in which the questions are presented to each other and how to organize the expression. For example, whether the gradient formed between two questions is appropriate. Whether the quantity and quality of the distribution of questions in the teaching content is consistent with the teaching focus. Whether the principle of gradual progression can be achieved between problems in order to realize the teaching objectives (Ilie, 2019). Whether the sequencing of questions interferes with the contingencies that occur in the flipped classroom. Whether the design of a series of questions arouses students' interest in learning and whether the transition is natural (Junco et al., 2010). The practical cooperation of classroom questions can attract students to participate in classroom interaction. Classroom questioning in the flipped classroom affects the process of student engagement in the classroom. Classroom questions affect students' participation.

(3) Group discussion in the Flipped Classroom Teaching Model under the individualism learning theory

Group discussion is a common learning method in the flipped classroom, which is also a very effective and innovative teaching strategy implemented nowadays. Students already have specific social skills and communication abilities, and some knowledge features in teaching are suitable for divergent thinking and group discussion. Many experts and scholars also believe that this learning mode is more in line with the domestic flipped classroom teaching form, can play a bridging role in the organization of teaching (Junco et al., 2010), and at the same time on the self-study before class and classroom learning also plays a buffer role. This learning mode makes the teaching effect of the classroom more vivid and situational, and students can experience and share the learning experience through face-to-face interaction in the classroom, thus promoting the internalization of students' knowledge. In addition, (Kumar, 2008), the behavior and fine processing of knowledge externalization, such as discussion among students, asking questions, rebutting each other, and adding knowledge, are all promoted. This more profound knowledge construction is more challenging in the traditional classroom. Hence, the "group discussion" significantly influences improving student participation in the flipped classroom.

(4) Self-study before class in the Flipped Classroom Teaching Model under the

individualism learning theory

In the flipped classroom learning, Self-study before class plays an important role in the whole learning process. Self-study before class means that while the teacher carefully prepares the teaching content, the students should also actively pre-study to prepare for learning (Leipzig et al., 2021). This is an important way to cultivate students' habit of self-study before class and give full play to students' status as the main learning body. As we all know, along with the continuous and deep development of the new curriculum reform (O'Flaherty & Phillips, 2015), the requirements for students in classroom teaching are also gradually improving. Self-study before class is also a process of continuous learning by themselves, which requires students to participate in classroom teaching and learning actively, take the initiative to explore and learn, and carry out independent learning before class so that the students' main position in teaching can be truly brought into full play (Siegler, 1988). The whole process of self-study before class in the flipped classroom is giving full play to the content they will learn in advance by reading carefully, searching for information, and finding important and difficult points before class. Students can solve some simple problems in the course through the self-study before class process to form some knowledge of the knowledge, so it is important to cultivate students' self-study before the class ability to enhance students' learning initiative and classroom participation.

2.2.4 Constructivist Theory

(1) The concept of constructivist theory

Constructivist theory originated in the 18th century during the Renaissance, and there are two views on its origin, one of which is considered to be from philosophy and the other from psychology. With the development of research, constructivist theory has been developed to a very perfect point. Simply summarize the core of the "constructivist theory", that is, the theory is learner-centered, through the learners actively explore and construct knowledge, mobilize students' enthusiasm (Schafer, 2015), on the basis of which the active construction of knowledge to make teaching in line with the students' "zone of recent development. ". The characteristic of the constructive theory is to highlight the student's subjectivity, so that students can stimulate the enthusiasm for learning and create a student-centered environment, and in this teaching process, the teacher can play a role in organizing, guiding and helping.

The teaching process in the flipped classroom also reflects the "student-centered," which is in line with the core of the constructivist theory, and the learning situation brought about by the exchange of roles between teachers and students allows the learners to give full play to their enthusiasm and initiative in learning. The characteristic of constructivism is that "individuals can learn wholeheartedly" (Schafer, 2015). In the flipped classroom process,

teachers should develop learning activities around real problems, allowing students to apply what they have learned to solve problems and strengthen the test of knowledge mastery. Constructivist learning theory emphasizes the main position of students in the classroom, breaks down the learning process into before, during, and after class, and strengthens the role of the teacher's guidance in the teaching process. Intervene in the learning behavior of students, while students outside the classroom fragmented time positive guidance so that it is effectively used to lead students to spontaneously use the class time to review the content of the class based on additional expansion, interest in learning, and the ability to solve the problems encountered in learning. It is the facilitator of student learning, the constructor of knowledge, and the realization of high-quality teaching.

Constructivism emphasizes that teaching is a dynamic knowledge-construction activity carried out by students under the guidance of teachers (Schafer, 2015). Therefore, combining individualism learning theory and constructivism theory, based on analyzing relevant research results, this paper proposes a model of influencing factors of classroom engagement in the flipped classroom environment. The model divides the influencing factors of participation in the flipped classroom into classroom questioning, group discussion, self-study before class, and learning interest.

(2) Learning interest in the Flipped Classroom Teaching Model under the constructivism Theory

With the rapid development of computer science and technology, "Internet +" has brought a wealth of online learning platforms, which has put forward new requirements for teaching reform. Flipped classroom improves students' interest in learning, enriches teaching content, and reforms teaching methods and tools. At present, skill-based courses are increasingly inclined to be competence-oriented, interactive, and practical applications to meet social development needs. Therefore, there is an urgent need to change the teaching form of traditional classrooms to meet the needs of society and enterprises (Zilvinskis & Dumford, 2018). Students have shown great interest in the flipped classroom teaching mode. We must further strengthen students' interest in learning through this teaching mode. For example, to create a good classroom learning atmosphere, broaden the learning platform, provide students with colorful and diversified network learning resources, and improve the timeliness, scientificity, and effectiveness of students' homework management. From the point of view of students' learning interests, classroom participation in the flipped classroom should effectively play out the radiation effect of students with high learning interests. Infect every student in the classroom, creating a pleasant learning atmosphere to improve students' enthusiasm and enthusiasm.

Class participation is the degree of students' active participation in the teaching and learning process, divided into the degree of students' overall participation and class participation (Leipzig et al., 2021). Other scholars have also studied the effects of gender,

grades, and seating on student classroom participation (Moraros et al., 2015). Junco et al. proposed the concept of student participation in the classroom early. They argued that the effectiveness of any practice or educational policy is most directly related to the efficacy of that practice or policy (Junco et al., 2010). Zilvinskis & Dumford studied the relationship between student participation and the relationship between teachers and students. Students are not just recipients of information in the classroom but subjects of learning (Zilvinskis & Dumford, 2018). The purpose of teaching is to create a space for students to participate, and a pluralistic learning community should be established in the teaching process (Chen et al., 2017).

After summarizing and analyzing a large amount of literature, it is found that most of the related research focuses on the study of the influencing factors of class participation and the study of proposing corresponding strategies. Many researchers have yet to go into the classroom to investigate and observe the current situation of class participation (Cui & Yu, 2019) but have tried to elaborate their views in the form of argumentation. More research should be done on strategies to improve and increase class participation for specific content teaching (Junco et al., 2010).

After summarizing and analyzing a large amount of literature, it is found that most of the relevant studies focus on the study of the influencing factors of classroom participation and the study of proposing corresponding strategies. The hotspots of research on classroom participation are mainly the influencing factors of participation, strategies to improve participation, the current situation of participation, measurement and evaluation of participation, and other aspects, involving both basic education and higher education. However, research on the level of participation in the flipped classroom under various new teaching modes is still relatively scarce in colleges and universities. Since the flipped classroom is to emphasize the student-centered mobilization of active cooperation among learners, compared with the traditional classroom there is a pre-course video self-study link, and the implementation of small class teaching in the flipped classroom provides conditions for more enhanced teacher-student interaction by carrying out group discussions in the classroom. Regarding the research on classroom participation, many researchers have tried to elaborate their own views in the form of argumentation, and have not really gone into the flipped classroom to investigate the situation of students' classroom participation.

2.2.5 Relevant Research on the Influencing Factors of Classroom Participation in Flipped Classroom

Class participation is the degree of students' active participation in the teaching and learning process, divided into the degree of students' overall participation and class participation (Leipzig et al., 2021). Other scholars have also studied the effects of gender, grades, and seating on student classroom participation (Moraros et al., 2015). Junco et al.

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2.2.6 Conceptual Framework

Flipped classroom creates a learning environment in which students take the initiative to learn, and the teacher no longer dominates classroom learning but by the students' problems and needs, with the teacher providing guidance and assistance to the students, which the students show a different participatory behavior from that of the traditional classroom. Students learning initiative in the flipped classroom is greatly improved, and they use their knowledge to solve problems instead of receiving knowledge mechanically.

This study constructs a model of the effect of flipped classroom teaching mode on classroom engagement of logistics management students based on a complete understanding of humanistic theory and constructivist theory. The variables designed in this study include three variables under the humanistic theory: classroom questioning, group discussion, and self-study before class. One variable under the constructivist theory is learning interest. The model focuses on the relationship between the variables and sets hypotheses based on the literature review. Through the literature review, classroom questioning, group discussion, self-study before class, and learning interest are related to the classroom engagement of logistics management majors under the flipped classroom teaching model. The correlation between the variables was clarified through theoretical analysis and model construction, and finally, the conceptual model was determined, see Figure 2.1.

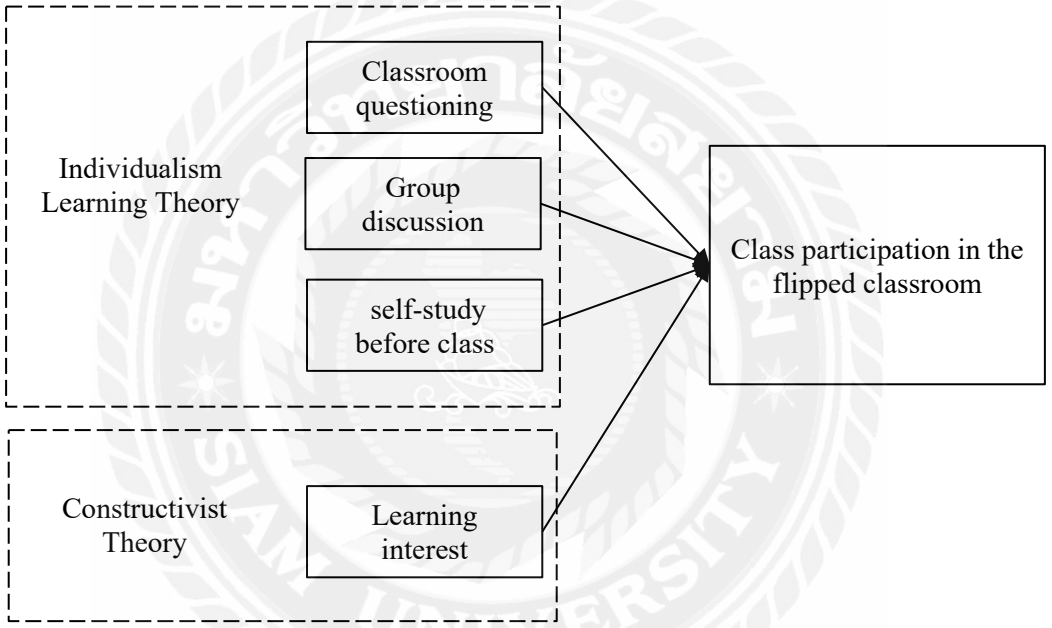

Figure 2.1 Conceptual framework

Chapter 3 Research Methodology

3.1 Introduction

This study summarizes the variables related to the factors influencing the flipped classroom teaching model on the classroom engagement of logistics management students. The main research variables in this study are Classroom questioning, Group discussion, Self-study before class and Learning interest. During the literature review process, it was found that because of different research subjects and different research contexts, the dimensionality classification of each variable by researchers is different. In this study, a quantitative research method was used to study the forklift skill learning students of logistics management major in Nanjing Commercial College using a questionnaire. The questionnaire is divided into two parts One part is the basic information of the survey sample, which is a control variable. The first part mainly includes the gender of the investigator, grade level. The second part of the survey content about the variables of the research hypothesis. Among them Classroom questioning, Group discussion, Self-study before class and Learning interest, Class participation, 3 items for each variable, totaling 15 items. A five-point Likert scale was used as the research scale. The questionnaires will be administered separately and the data from the sample survey will be collected and counted and the findings of the study will be summarized.

3.2 Research Design

This study uses quantitative research methods. The questionnaire was used in the quantitative research. SPSS was used to statistically analyze the questionnaire analyze the reliability and validity of the questionnaire. After determining that the reliability and validity were up to the standard, a multiple regression analysis was used to determine the influencing factors of classroom participation in the flipped classroom environment. In this paper, a suitable scale is chosen as a reference to provide some basis for the design of the questionnaire. Through literature reading and combing, this study investigates Classroom questioning, Group discussion, Self-study before class, and Learning interest in Class participation. The scale of this paper totaled 15 items, using a five-point Likert scale with a score of 1-5, representing strongly disagree, disagree, generally, agree, and strongly agree. The higher the score means, the more agree with the item.

Table 3.1 Marketing Contents measurement item

Variate	Measuring item	NO.
Classroom questioning	1. When your teacher asks a question, the more commonly used approach is teacher-student question and answer.	QS1
	2. Teacher asks a question and you usually get it right.	QS2

	3. In the flipped classroom if a student asks the teacher a question or a different opinion, the teacher is encouraged to ask questions and discuss them appropriately.	QS3
Group discussion	4.You will be active in flipped classroom group discussions	QS4
	5. In a flipped classroom group discussion, you listen carefully to the other students in the group.	QS5
	6. In a flipped classroom group discussion, the students in your group who speak the most are generally the higher achievers.	QS6
Self-study before class	7. Appropriate amount of self-study prior to class.	QS7
	8. Appropriate level of difficulty for self-study before class.	QS8
	9. Good mastery of self-study prior to class.	QS9
Learning interest	10. I was interested in every section of the textbook.	QS10
	11. I often think positively when my teacher asks a question.	QS11
	12. I was able to actively participate in my studies without being prodded.	QS12
Class participation	13. I often take the initiative in the flipped classroom.	QS13
	14. Our class has a high level of participation in the classroom.	QS14
	15. The teacher's questions in the flipped classroom allow students to actively participate in the classroom.	QS15

3.3 Hypothesis

This study combed the related research literature, combined humanistic theory and constructivist theory, and determined the factors influencing student engagement in the flipped classroom by combining the characteristics of the flipped classroom. The teacher and students' questions in the flipped classroom are students' ideas and doubts based on their own learning, and the teacher understands the feedback of students' learning. Students' participation in group discussion in the flipped classroom can actively participate in the teaching session. Self-study before the flipped classroom is that students take the initiative to grasp the knowledge through self-study, so that the confusion is clear. Learning interest means that students feel the desire to explore the learning process and content in the flipped classroom. The following hypotheses are proposed based on the combing, see Figure 3.1.

H1: In the flipped classroom teaching model, classroom questioning positively affects classroom participation of students teaching forklift skills in logistics management.

H2: In the flipped classroom teaching model, Group discussion positively affects classroom participation of students teaching forklift skills in logistics management.

H3: In the flipped classroom teaching model, Self-study before class positively affects classroom participation of students teaching forklift skills in logistics management.

H4: In the flipped classroom teaching model, Learning interest positively affects classroom participation of students teaching forklift skills in logistics management.

3.4 Population and Sampling

This study focuses on the influencing factors of the flipped classroom teaching model on the classroom engagement of logistics management students. The main object of the study is the forklift skill learning students majoring in logistics management at Nanjing Commercial College. For this study, the main research method is the random sampling method. In this paper, the students majoring in logistics management at Nanjing Commercial College are taken as the research object. The research object must meet the study of the course of Forklift Skills for Logistics Management majors. The survey includes students' gender, grade level, classroom questions, group discussion, self-study before class, learning interest, and classroom participation.

$$\mathrm{n} = \frac{s^2 * p^2}{E}$$

In the formula, n represents the sample size, s value for the standard normal distribution of the quartile, for the confidence level generally take the value of 95%, at this time Z = 1.96. p for the sample standard deviation, the sample standard deviation of the estimated value of the standard deviation of the general use of 0.5, to determine the error tolerance E (i.e., the maximum permissible value of the difference between the sample mean and the overall mean), E = 0.05. Calculation of the results obtained for the 398 samples. For the random sampling method, an online survey will be conducted using Questionnaire Star for questionnaire distribution, and the sample will be drawn randomly from the overall population.

3.5 Data Collection

This paper investigates the influence factors of the flipped classroom teaching mode on the classroom participation of logistics management students. It adopts the questionnaire survey method by using questionnaire star to design the questionnaire used in this survey. Based on combing and studying the literature, this paper identifies the relevant literature on the variables involved in this study for comparative analysis and summarization. It makes moderate adjustments and refinements according to the content of this study to summarize the questionnaire items used in this study.

The questionnaire of this study consists of four elements, the title, the introduction, the basic information, and the questions about the variables involved in the study. The questionnaire title makes it easier for the respondents to clarify the purpose of this research study. The introduction reflects the definition of challenging terms to understand to help respondents understand the content of this research. The survey respondents of this study are

the forklift skill learning students of logistics management major at Nanjing Commercial College. The main survey of the questionnaire contains all the combing variables of the literature. Therefore, the survey process was conducted online, using Questionnaire Star. The questionnaire was collected online, and the survey was conducted in class by the teachers of logistics management majors at Nanjing Commercial College, realizing the active cooperation of the subjects. 450 questionnaires were distributed during the survey, 403 questionnaires were recovered, and 403 questionnaires were valid, with an effective rate of 89.56%.

3.6 Data Analysis

3.6.1Reliability

Before analyzing the data from the questionnaire, the reliability test is an important method to ensure high-quality survey data. The reliability test is an important test to examine the reliability, stability, and consistency of the questionnaire test variables, usually using the Alpha coefficient to measure questionnaire reliability. According to the survey data, the overall reliability test of the questionnaire is carried out with a total of 15 items. The reliability of the questionnaire is usually measured with the help of Cronbach's α. Generally speaking, Cronbach's α value of 0.7 or more is acceptable, and a Cronbach's α value of less than 0.6 indicates that the questionnaire is not good and needs to be revised. The overall reliability test of the questionnaire shows that Cronbach's Alpha coefficient is 0.945, which is greater than 0.8. The reliability test for each variable is shown in Table 3.2. The test results show that the classroom questioning Cronbach's Alpha coefficient is 0.850, the group discussion Cronbach's Alpha coefficient is 0.870, the self-study prior to the class is 0.897, and the learning interest Cronbach's Alpha coefficient is 0.945, which is greater than 0.8. The reliability test is shown in Table 3.2. Interest Cronbach Alpha Coefficient is 0.894, and Class Participation Cronbach Alpha Coefficient is 0.859, all of which are greater than 0.8, indicating that the scale has high stability and consistency.

Table 3.2 Variate reliability test

Variate	Cronbach's α	Item
Classroom questioning	0.850	3
Group discussion	0.870	3
Self-study before class	0.897	3
Learning interest	0.894	3
Class participation	0.859	3
Total	0.945	15

3.6.2 Validity

Before conducting factor analysis in the study, the KMO test and Bartlett's Spherical test are required. When the KMO test value is greater than 0.6, and the Sig value is significant,

the scale is suitable for factor analysis. Therefore, in this study, the KMO and Bartlett's sphere tests were performed on the collected data. These tests and analyses ensured that the validity of the research scales met the requirements.

(1) Classroom questioning

The variable Classroom questioning was factor analyzed using SPSS. The data analysis yielded a significant Sig value and a KMO value of 0.732, indicating that the results of this study could be factor analyzed. Factor analysis was conducted on the question items. The factors were extracted using Principal Component Analysis during the analysis process. Finally, the factor loading matrix was obtained to get the Classroom questioning factor loading table, as shown in Table 3.3. From the data in the table, it can be seen that Classroom questioning extracted only one common factor, which explains 76.934% of the variance, indicating that the ability to explain the variance is strong. The loadings of each measurement item are greater than 0.8, indicating that the explanatory power is better and each measurement item has better convergent validity.

Table 3.3 Classroom questioning factor analysis

Variable	Items	1
Classroom questioning	QS1	0.880
	QS2	0.878
	QS3	0.873
% of Variance		76.934%
Cumulative %		76.934%
KMO		0.732
df		3
Sig.		0.000

(2) Group discussion

The data analysis resulted in a significant Sig value and a KMO value of 0.723, indicating that the results of this study can be factor analyzed. Factor analysis of the question items resulted in a factor loading matrix, and a Group discussion factor loading table was obtained, as shown in Table 3.4. From the data in the table, it can be seen that Group discussion extracted only one common factor, which explained 79.363% of the variance, indicating a strong ability to explain the variance. The loadings of each measurement item are greater than 0.7, which indicates that the explanatory power is better and each measurement item has better convergent validity.

Table 3.4 Group discussion factor analysis

Variable	Items	1
Group discussion	QS4	0.768
	QS5	0.842
	QS6	0.771
% of Variance		79.363%
Cumulative %		79.363%
KMO		0.723

df	3
Sig.	0.000

(3) Self-study before class

The data analysis yielded a significant Sig value and a KMO value of 0.745, indicating that the results of this study can be factor analyzed. Factor analysis of the question items resulted in a factor loading matrix and a Self-study before the class factor loading table was obtained, as shown in Table 3.5. The data in the table shows that Self-study before class extracted only one common factor, which explains 82.919% of the variance, indicating a strong explanation of the variance. The loadings of each measurement item are greater than 0.8, which indicates that the explanatory power is better and each measurement item has better convergent validity.

Table 3.5 Self-study before class factor analysis

Variable	Items	1
Self-study before class	QS7	0.902
	QS8	0.904
	QS9	0.926
% of Variance		82.919%
Cumulative %		82.919%
KMO		0.745
df		3
Sig.		0.000

(4) Learning interest

The data analysis yielded a significant Sig value and a KMO value of 0.749, indicating that the results of this study can be factor analyzed. Factor analysis of the problem items resulted in a factor loading matrix, which yielded a table of Learning interest factor loadings, as shown in Table 3.6. The data in the table shows that Learning interest extracted only one common factor, which explains 82.528% of the variance, indicating a strong explanation of the variance. The loadings of each measurement item are greater than 0.7, indicating that the explanatory power is better and each measurement item has better convergent validity.

Table 3.6 Learning interest factor analysis

Variable	Items	1
Learning interest	QS10	0.906
	QS11	0.903
	QS12	0.917
% of Variance		82.528%
Cumulative %		82.528%
KMO		0.749
df		3

Sig.	0.000

(5) Class participation

The data analysis yielded a significant Sig value and a KMO value of 0.733, indicating that the results of this study can be factor analyzed. Factor analysis of the question items resulted in a factor loading matrix and a Group discussion factor loading table, as shown in Table 3.7. From the data in the table, it can be seen that Group discussion extracted only one common factor, which explained 78.030% of the variance, indicating a strong ability to explain the variance. The loadings of each measurement item are greater than 0.7, which indicates that the explanatory power is better and each measurement item has better convergent validity.

Table 3.7 Class participation factor analysis

Variable	Items	1
Class participation	QS13	0.892
	QS14	0.887
	QS15	0.871
% of Variance		78.030%
Cumulative %		78.030%
KMO		0.733
df		3
Sig.		0.000

The results of factor analysis for each variable revealed that the cumulative explanatory rates for classroom questions, group discussion, self-study before class, and interest in learning were 76.934%, 79.363%, 82.919%, and 82.528%, respectively, indicating that the independence of each dimension was good. This indicates that the overall validity of the questionnaire is good.

Chapter 4 Findings

4.1 Introduction

A literature review was conducted to sort out the factors influencing the flipped classroom teaching model on the classroom engagement of logistics management students. Using quantitative research methods, the data reliability and validity of the collected questionnaires were analyzed to determine the validity of the collected data. In order to further understand the relationship between the variables, the data were analyzed by descriptive statistics, correlation analysis, and multiple regression analysis. The analysis was used to verify the hypotheses and clarify the relationship between the interactions of the variables in the model of classroom engagement of logistics management students by the flipped classroom teaching model.

4.2 Description of Statistical Variables

Descriptive statistical analysis analyzes and studies basic information about a research sample. The main purpose is to ensure that the sample data are true and accurate and that the sample is representative. The students of logistics management major in Nanjing Commercial College as the research object; the demographic characteristics of the variables mainly include gender, grade, major, etc., see Table 4.1. descriptive statistics show that the proportion of females 55.6%, males account for 44.4%, and the ratio of male and female students is close to the actual situation. First-year students accounted for 13.2%, second-year students accounted for 83.6%, and third-year students accounted for 3.2%, which is in line with the actual situation of logistics management majors in Nanjing Commercial College; the professional skills courses are mainly offered in the second year, and some of the first-year students who are good at learning learn the professional course of "Forklift Skills" ahead of time. In contrast, third-year students fail to learn and need to study again. Therefore, the distribution ratio is in line with the actual situation.

Table 4.1 Distribution of basic characteristics of samples (N = 403)

Items	Options	Frequency	Percent%
Gen	Male	179	44.4
	Female	224	55.6
Grand	1	53	13.2
	2	337	83.6
	3	13	3.2
Major	Logistics Management	403	100.0
	Others	0	0.0
	Total	403	100.0

4.3 Results of the Study

4.3.1 Correlation analysis

The existence of a correlation between variables is analyzed by Pearson correlation coefficient (r), which ranges from -1 to 1. The closer the value of r is to 1 or -1, the stronger the correlation is; the closer it is to 0, the weaker the correlation. According to Table 4.2, the correlation coefficients, r, range from 0 to 1 and are significantly correlated at the 0.01 level, and there is a significant correlation between the two variables (P<0.01).

Table 4.2 Correlation between variables (Pearson correlation matrix)

Pearson Correlation	Classroom questioning	Group discussion	Self-study before class	Learning interest	Class participation
Classroom questioning	1				
Group discussion	.629**	1			
Self-study before class	.602**	.661**	1		
Learning interest	.598**	.700**	.663**	1	
Class participation	.593**	.654**	.598**	.708**	1

NOTE：*P<0.05, **P<0.01, ***P<0.001

According to the table, the Pearson correlation coefficients of Classroom questioning, Group discussion, Self-study before class, Learning interest, and Class participation are all greater than 0.5, less than 0.9, and P<0.01, indicating that there is a correlation between each variable and it is positive. It indicates that there is a correlation between each variable, and it is positive.

The Pearson's correlation coefficient between learning interest and classroom questioning is 0.598, the Pearson's correlation coefficient between class participation and classroom questioning is 0.593, and the Pearson's correlation coefficient between class participation and Self-study before class is 0.598. class self-study Pearson's correlation coefficient is 0.598, and coefficients less than 0.6 are considered general correlations. The coefficient of relationship between other variables is more than 0.6 as highly correlated. The analysis can be understood that the correlation coefficient between each variable is between 0.5 and 0.7. There is no coefficient more than 0.8 to be no correlation coefficient less than 0.5, indicating no linear correlation between the variables in the research model. At the same time, there is a suitable correlation that aligns with the requirements. The correlation between the variables indicates that each variable plays a certain role in the model, reflecting the rationality of the model construction.

4.3.2 Multiple regression analysis

The results of the analysis using multiple regression are shown in Table 4.4. The regression equation is significant, F=134.215, P<0.001. the Durbin-Watson test value is 1.901, between 1.8 and 2.2. the data is independent and meets the requirements of linear regression. In the diagnostic results of covariance, the VIF values of Classroom questioning, Group discussion, Self-study before class, and Learning interest were 0.910, 1.158, 1.189, and 1.165, respectively, and the VIFs were close to 1, which meets the requirement and indicates that the there is no covariance in the data.

The results of multiple regression analysis show that Classroom questioning (β =0.141, P<0.05) and classroom questioning in the flipped classroom of forklift skill teaching for logistics management majors positively affect classroom participation, and hypothesis H1 is valid.

Group discussion (β=0.173, P<0.05) Logistics management majors forklift Group discussion (β=0.173, P<0.05) in the flipped classroom of skills teaching has a positive effect on classroom participation, and hypothesis H2 is valid.

Self-study before class (β=0.081, P<0.05) in the flipped classroom of forklift skills teaching for logistics management majors has a positive effect on classroom participation, and hypothesis H3 is valid.

Learning interest (β=0.365, P<0.05) in the flipped classroom of skills teaching for logistics management majors has a positive effect on classroom participation, and hypothesis H4 is valid.

The variables jointly explain the weight of classroom engagement is 57.0%, which is greater than 50% and meets the requirement.

Table 4.4 Regression analysis

Item	B	Beta	t	Sig.	VIF	F	Durbin-Watson
C	3.353	-	7.744	0.000		134.215***	1.901
CQ	0.141	0.166	3.674	0.000	0.910		
GD	0.173	0.205	4.005	0.000	1.158		
PSS	0.081	0.096	1.989	0.047	1.189		
LI	0.365	0.401	7.973	0.000	1.165		
R Square	0.574						
Adjusted R Square	0.570						

NOTE：*P<0.05, **P<0.01, ***P<0.001, CQ is class questioning, GD is group discussion, PSS is Self-study before class, LI is Learning interest.

According to the analysis results, we can get the multiple regression formula of the factors influencing students' classroom engagement in the flipped classroom environment of forklift skills teaching in logistics management:

$$CP=3.353+0.141\ CQ+0.173\ GD+0.081\ PSS+0.365LI$$

NOTE：CP is Class Participation

Chapter 5 Conclusion and Recommendation

5.1 Conclusion

This study focuses on the influencing factors of classroom engagement in the flipped classroom teaching mode to make students actively participate in classroom activities to improve the teaching effect of the flipped classroom. This study combines relevant literature, prepares a questionnaire, and statistically analyzes the results. The conclusions of this study are as follows:

In the flipped classroom teaching model, classroom questioning significantly positively affects classroom participation of students teaching forklift skills in logistics management, and H1 is established. In the flipped classroom teaching model, group discussion significantly positively affects classroom participation of students teaching forklift skills in logistics management and H2 holds. In the flipped classroom teaching model, self-study before class significantly positively affects classroom participation of students teaching forklift skills in logistics management and H3 holds. In the flipped classroom teaching model, learning interest significantly positively affects classroom participation of students teaching forklift skills in logistics management and H4 holds.

In summary, it can be seen by analyzing the summarized variables that the four hypothesized influencing factors influence classroom participation to different degrees. By improving effective classroom questioning, reasonably assigning groups for group discussion, developing good habits of self-study before class, and stimulating students' interest in learning appropriately, at the same time, teaching and learning interactions in the flipped classroom are strengthened, and the teacher turns into the instructor of the learners. The learners become the center of learning, which improves the way of communication between the teacher and the learners by changing the learner's view of learning, and has a positive effect on flipped classroom logistics management. The classroom participation of students majoring in logistics management has a positive impact.

5.2 Recommendation

Teachers in the classroom can create an open and equal learning atmosphere so that students in the classroom will also be more relaxed and happy to participate in the learning of thinking and discussion actively; students feel this positive atmosphere, and they will be more enthusiastic in the questioning session to express themselves. Therefore, it is important to enhance teachers' effective questioning in the flipped classroom in order better to improve the effect of undergraduate students' classroom participation. In each flipped classroom lesson, the teacher develops the teaching content in the form of different games, designs the questions to be asked in the chapter, and tries to eliminate the questions that have no practical

significance. The questions should also follow quality rather than quantity, and at the same time, should not forget the purposeful, rigorous, exploratory, and inspiring characteristics of the questions. In the flipped classroom, the teacher's questions should stimulate students' interest and inspire their thinking, and the questions should be formulated from the content of this chapter of the course so that the questions have value. Teachers create certain problem scenarios and then ask probing and inspiring questions to arouse students' cognitive interest to improve classroom participation.

Group discussion in the teaching process of the flipped classroom is more important to the influence of classroom participation. Therefore, group discussion is a more important form of teaching organization in flipped classroom learning. Teachers can pay attention to role integrity when grouping students, and each group member should have a specific role. Keep the appropriate number of students in the group; in actual teaching, the number of students in the group should be kept at 5~6, and the members should encourage each other to participate in the learning. Put students who are close to each other in terms of cognitive ability, thinking method, and learning style into a group so that the members can concentrate on each other to achieve the purpose of solving the learning tasks effectively, so the principle of grouping in this way is regarded as a division of the same quality.

Moreover, the division of large differences in cognitive abilities, thinking methods, and learning styles among group members is regarded as having different qualities. The collision of different viewpoints and methods between students is more likely to stimulate each other's discussion to achieve a common increase in the classroom participation of each group member. Effective group discussion cannot be separated from the teacher's role and function in the classroom.

From the model of influencing factors of participation in flipped classroom, it can be seen that learning interest has a significant positive effect on classroom participation, which indicates that it is still important to enhance students' interest in learning the course content in flipped classroom learning. It has an important effect on classroom participation. The intrinsic motivation for students to learn is self-study before class. However, through the implementation of the flipped classroom teaching model, this self-study before class is practiced and implemented. First, it is the responsibility of all teachers to conduct guided self-study with their students prior to conducting lessons in the flipped classroom. It is important to let students know that this self-study process is a process of solving difficulties. Second, one of the teaching objectives is for teachers to guide students to choose learning objectives according to their learning situation, to develop and exercise learners' self-learning ability, and to stimulate learners' initiative to learn new things. In order to better improve the shortcomings of self-study before class, teachers need to fully understand the degree of implementation of self-study and the efficiency of self-study and other aspects of information.

Teachers of forklift truck technology use the work-task teaching form to carry out, which is divided into a number of segments and greatly improves the students' interest in

learning the course content. Focusing on enhancing students' interest in learning in a flipped classroom can better promote student engagement. In order to enhance the learners' interest in learning the course content, firstly, in the flipped classroom, teachers should pay attention to the fact that whether or not a question can arouse the students' interest and resonance has a direct impact on the classroom atmosphere and the degree of classroom participation. Secondly, in the flipped classroom, teachers should enhance the infectiousness and affinity of the teaching activities so that the teaching activities are positive, colorful, and meaningful characteristics can be reflected. This requires teachers to design novel teaching situations in class carefully and also to use positive, active, healthy, and lively teaching language so that the students are in the scene. The situation is blended, which fully stimulates the most vigorous state of the learners, and naturally triggers the learners' greatest desire for learning.

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Appendix
Questionnaire

Dear Students,

Thank you for your participation in this questionnaire survey. The survey will be conducted in an anonymous manner and your relevant information will be kept confidential. Thank you again for your cooperation.

Part Ⅰ:

1. Gender? A Male B Female

2. Grand? A 1 B 2 C 3

3. Major?

A Logistics Management B Others

Part Ⅱ: Please judge to what extent you agree with the following statement, please choose the most appropriate option, and mark the corresponding number " √ ".

Measuring item	Strongly disagree	Disagree	General	Agree	Strongly agree
1. When your teacher asks a question, the more commonly used approach is teacher-student question and answer.					
2. Teacher asks a question and you usually get it right.					
3. In the flipped classroom if a student asks the teacher a question or a different opinion, the teacher is encouraged to ask questions and discuss them appropriately.					
4.You will be active in flipped classroom group discussions					
5. In a flipped classroom group discussion, you listen carefully to the other students in the group.					
6. In a flipped classroom group discussion, the students in your group who speak the most are generally the higher achievers.					
7. Appropriate amount of self-study prior					

to class.					
8. Appropriate level of difficulty for self-study before class.					
9. Good mastery of self-study prior to class.					
10. I was interested in every section of the textbook.					
11. I often think positively when my teacher asks a question.					
12. I was able to actively participate in my studies without being prodded.					
13. I often take the initiative in the flipped classroom.					
14. Our class has a high level of participation in the classroom.					
15. The teacher's questions in the flipped classroom allow students to actively participate in the classroom.					