DEVELOPING OF ACADEMIC ACHIEVEMENT IN SYSTEMATIC ANATOMY COURSE THROUGH THE FLIPPED CLASSROOM TEACHING APPROACH OF FIRST GRADE STUDENT AT LUZHOU VOCATIONAL COLLEGE OF MEDICAL DEVICES

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THESIS FOR THE DEGREE OF MASTER OF EDUCATION
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A THESIS SUBMITTED IN FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF EDUCATION IN CURRICUICULUM AND INSTRUCTION RAJABHAT MAHA SARAKHAM UNIVERSITY
2024

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ABSTRACT

The purposes of this study were to develop the flipped classroom teaching approach with an efficiency. to investigate effectiveness index of the developed flipped classroom teaching approach. to compare academic achievement scores between before and after using the flipped classroom teaching approach of students. to study the students' satisfaction towards leaned using the flipped classroom teaching approach

Research results show that The overall level of student participation factor and overall level of development is high. results of an analysis on the relationship between student participation factors that affect student development overall, there was the most correlation between evaluation participation scored an average score of 76.48 of the total score, which is higher than the required score.

Keywords : Flipped Classroom, development

_____Advisor

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Thank you to parents who have been teaching and caring for the students until today, and thank your family for always being with them. This has made the Master of Education in Curriculum and Teaching with great pride.

The value and benefits of this thesis are given to the students as a sacrifice of grace for all teachers who have contributed to the educational prosperity and academic performance.

Mr.Shen Wenzhong

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CHAPTER 1
INTRODUCTION

1.1 Background and Significance of the Problem

1.1.1 Research background

With the rapid development of modern information technology, the popularization of computer and network not only changes the way of entertainment, but also has a profound impact on the reform of teaching. With the diversification of knowledge acquisition methods, the traditional teaching ideas and teaching methods have to face reform.

Compared with traditional media and technical means, open and intelligent modern information technology breaks through the barriers of time and space, facilitating teachers and students to interact anytime and anywhere. In the Education Informatization Development Plan (2011-2020) issued by the Ministry of Education in 2011, it was proposed that we should keep up with the informatization background, strive to realize the integration of education, teaching and information technology, use information technology to conduct heuristic and participatory teaching, and research and establish a new student-centered teaching model. In 2018, the Ministry of Education also clearly stated in the "Opinions on Accelerating the Development of Higher Education and Basic Education to Comprehensively Improve Talent Training" that classroom teaching reform is imminent, and efforts should be made to promote mixed teaching and actively build a teaching model that combines online learning and offline classroom. The change from "teacher-centered" to "student-centered" requires teachers to use appropriate teaching means and scientific and reasonable evaluation methods according to the teaching practice, mobilize students' learning interest, and improve teaching quality and teaching effect. The rise and development of flipped classroom provides an opportunity for the realization of these goals.

Human anatomy is divided into systematic anatomy, local anatomy, sports anatomy, and sectional anatomy according to the direction of professional courses, among which

systematic anatomy is the main important basic course to learn. Only by learning systematic anatomy well can we lay a solid foundation for other disciplines such as physiology, pathology, medicine and surgery, gynecology, and pediatrics in the later period. Systematic anatomy refers to the science of describing the morphological structure of human organs according to the functional systems of the human body, which is the basis of learning local anatomy and sectional anatomy. Therefore, systematic anatomy is the first thing that medical students need to learn and master. The teaching object of our school is mainly vocational college students, who have a short time in school (medical college students only learn theory in school for two years), anatomy course time is limited, and many subjects are studied, which occupies a large number of anatomy course time. However, anatomy, as a basic professional course with strong theory and various concepts, is difficult to learn and boring for vocational students.

1.2 Research significance

Engels once said: "Without anatomy, there is no medicine", and systematic anatomy is a very important basic course for all medical students to learn first, therefore, constantly improve the quality of anatomy teaching is the primary task of each of us engaged in anatomy teaching workers.

The traditional infusing teaching method does not give play to the students' subjectivity, but also seriously blows the students' enthusiasm for learning. Flipped classroom teaching approach, on the contrary, pays more attention to the principal position of students, transforms the one-way transfer of knowledge in traditional teaching into a two-way interaction between teachers and students, so as to help students better understand and master knowledge, promote the internalization of knowledge, and enhance students' learning initiative.

1.3 Research Objectives

The purpose of this study is to explore the practical application and research of the flipped classroom teaching approach in the course of Systematic Anatomy.

1.3.1 To develop the flipped classroom teaching approach for first grade students with an efficiency 70/70.

1.3.2 To investigate effectiveness index of the developed flipped classroom teaching approach.

1.3.3 To compare academic achievement scores between before and after using the flipped classroom teaching approch of students.

1.3.4 To study the students' satisfaction towards leaned using the flipped classroom teaching approch.

1.4 Research Hypothesis

The students who learned using the flipped classroom teaching approach had higher academic achievement scores than before learned.

1.5 Scope of Study

1.5.1 Population and Samples [or Target Group / Key Informants]

1.5.1.1 Population

Luzhou Vocational College of Medical Devices 2023 nursing department freshman.

1.5.1.2 Samples

Class 1, Grade 2023, Nursing Department, Luzhou Vocational College of Medical Devices, 40 students.

1.5.2 The variables studied in the research

1.5.2.1 Independent Variable

Independent variables in this study include: 1) Teaching strategies and methods adopted in flipped classroom approach, including preview materials, online learning resources, classroom activity design, etc. 2) Students' activeness and participation in flipped classroom teaching environment.

1.5.2.2 Dependent Variables

The dependent variables in this study include: 1) The performance of students' knowledge mastery and application ability obtained in the course of Systematic Anatomy, usually measured by exam scores or homework scores. 2) Evaluation of students' attitude and satisfaction with flipped classroom teaching approach.

1.5.3 Scope of Content

28 class hours of flipped classroom teaching were carried out on 5 chapters of "motor system", "digestive system", "respiratory system", "urinary system" and "reproductive system" in the course of Systematic Anatomy for freshmen nursing students of Grade 2023 in Luzhou Vocational College of Medical Devices.

1.5.4 Research Area

This study belongs to the field of pedagogy. Through the use of pre-test, post-test, satisfaction survey and other research methods, to observe and compare the effect of flipped classroom teaching approach in the first class of 2023 nursing department of Luzhou Vocational College of Medical Devices.

1.5.5cresearch period

2023.9.1-2023.11.1

1.6 Definitions

Flipped classroom teaching approach: It is a teaching method that moves the traditional classroom teaching content to pre-class autonomous learning or online learning, and uses classroom time to carry out interactive activities such as practice, discussion and cooperative learning. Step 1: Upload the teaching video and key learning tasks of the chapter, complete the pre-test of the chapter, and answer questions in the class group; Step 2: Explain the key and difficult points in class, answer questions uniformly, sort out the teaching content, consolidate the key points of knowledge, and summarize the chapter content; Step 3: Summarize and reflect, Complete the chapter post-test;

Systematic anatomy course: The scientific study of human structure and organ systems, dealing with the structure, function, and interrelationships of individual tissues, organs, and systems within the human body.

Teaching design: It refers to the teachers' careful planning and arrangement of teaching activities, teaching materials and resources to promote students' learning according to the teaching objectives and students' needs.

Academic performance: refers to the performance of students' knowledge mastery and application ability in the course, usually measured by test scores or homework scores.

Student participation: refers to the degree of students' activeness and participation in teaching activities, including participation in pre-class preview, class discussion and practical activities.

Learning experience: refers to students' subjective feelings and evaluations in the learning process, including their satisfaction with and cognition of teaching activities, teaching materials and classroom environment.

Efficeicy of 70/70:

The first number 70 (E1) indicates the grade of the learning process expressed as a percentage of the score. The average obtained by observing the learning behavior in this case, the test at the end of each program can be found from the score obtained from the answer sheet, and the average score is above 75%.

The final 70 (E2) is a percentage of the average mark of all students. Achieve a score of 70 or above in the exam after studying modern Chinese history through learning activities.

Effectiveness:

Academic achievement: Academic performance refers to the average grade of students using the flipped classroom teaching method to study systematic anatomy improvement, as well as the test scores of pre-test and post-test.

The students’ satisfaction:Student satisfaction refers to the improvement of the scores of the learning system anatomy course through the flipped classroom teaching method, and is evaluated by the form of satisfaction questionnaire.

1.7 Expected Outcome

1.7.1 Improve students' independent learning ability: Through flipped classroom, students have more time and opportunities to preview before class, learn independently and explore related learning resources. This self-directed learning arrangement can foster students' independent thinking and learning ability and stimulate their interest in subject knowledge.

1.7.2 Promote deep learning and understanding: The Flipped classroom approach encourages students to engage in hands-on, discussion and interactive activities during class time. Through such activities, students can more deeply understand and apply the knowledge of systematic anatomy, rather than just passively receiving lectures.

1.7.3 Enhance the flexibility and personalization of learning: Flipped classroom provides more flexibility, allowing students to arrange learning time and way according to their own learning pace and needs. Each student can choose their own learning resources and activities according to their own interests and learning style, so as to achieve personalized learning results.

1.7.4 Promote cooperative learning and communication: The flipped classroom approach encourages students to carry out cooperative learning, group discussion and interaction in the classroom. By discussing and sharing ideas with each other, students can better understand and apply what they have learned. This collaborative learning environment also helps to develop students' teamwork and communication skills.

1.7.5 Improve students' participation and satisfaction with the course: As the flipped classroom approach provides more interaction and practical opportunities, students are more actively involved in classroom activities. Such engagement and motivation can promote students' interest and motivation in learning and increase their satisfaction with the course.

CHAPTER 2
LITERATURE REVIEW

The researcher has conducted a study and research on relevant documents and research and set the conceptual framework as follows.

1. Concepts and Theories
2. Related Researches
3. Conceptual Framework

2.1 Concepts and Theories

2.1.1 Flipped classroom teaching approach: Flipped classroom is a teaching method in which students learn independently through preview materials and online learning resources before class, and practice, discussion and interactive activities are conducted in class. This approach emphasizes active learning and participation by students, as well as collaboration and practice in the classroom.

2.1.2 Independent learning: Independent learning refers to the ability of students to arrange learning activities according to their own interests, needs and learning progress. In the flipped classroom, students master the preview content through independent learning to prepare for practice and discussion in class.

2.1.3 Cooperative learning: Cooperative learning encourages students to collaborate, discuss and share ideas in small groups to solve problems and complete tasks together. In the flipped classroom, cooperative learning activities can help students understand and apply the knowledge of systematic anatomy more deeply.

2.1.4 Deep learning: Deep learning refers to the learning style in which students deepen their cognition and meaning of subject concepts by understanding, applying and evaluating knowledge. Flipped classrooms provide more hands-on and interactive opportunities that can facilitate deep learning for students.

2.1.5 Social constructivism of building knowledge: This theory emphasizes that students co-build knowledge by engaging in social interaction and cooperation. In the flipped classroom, students work together to build and share knowledge about systemic anatomy through activities and discussions.

2.1.6 Learning experience and motivation: Learning experience refers to students' feelings and evaluations in the learning process, including their satisfaction with the teaching environment, teaching resources and learning tasks. Learning motivation refers to the motivation and interest of students to participate in learning. Flipped classrooms can provide a richer, more positive learning experience and learning motivation, thereby promoting better student engagement in learning.

Through the redesign and arrangement of teaching structure and teaching time, online self-learning is combined with offline group discussion, and the three parts before class,

during class and after class are effectively connected through the media of the Internet. Flipped classroom is a new teaching mode that promotes educational reform on the basis of the development of network information technology. This model puts the shallow knowledge that students can master by themselves before class, and students learn by watching online teaching videos before class, and put the in-depth knowledge that needs to be discussed in class, so as to analyze, solve and explore problems.

2.2 Related Researches

Since the academic circles have different research emphases on flipped classroom, no authoritative and consistent concept has been formed up to now. Therefore, the typical definition in existing studies is selected for an overview.

2.2.1 Foreign research status:

2.2.1.1 Flipped classroom first appeared in Woodland Park High School, the United States, by the school's two chemistry teachers, Jonathan Berman and Aaron Sams jointly proposed. They believe that flipped classroom is a new form of teaching in which teachers make learning videos and students learn in advance and complete homework in class. Brian Gonzalez, director of global education at Intel, believes that

flipped classroom is to reverse the process of knowledge transfer and knowledge internalization in the traditional teaching process, saving classroom time to facilitate communication and learning between teachers and students.

With the passage of time, the research on flipped classroom has been further improved and developed. Jonathan Berman and Aaron Sams began to shift the perspective of flipped classroom research to flipped learning, proposing that flipped learning is a teaching form that transforms the static teaching space of a group into a dynamic individual learning environment and leads students to use concepts to carry out creative curriculum learning.

2.2.1.2 In 2010, in order to improve students' low learning interest and academic performance, Clintondale High School adopted the flipped classroom teaching model. In the first two years of flipped classroom instruction, students' interest in learning and academic achievement improved significantly. To this end, President Greg Green has extended flipped teaching to the entire campus.

2.2.1.3 In 2011, Stone Bridge Elementary School in Minnesota, USA implemented flipped teaching in the mathematics curriculum. Teachers use the Moodle system to provide students with learning videos, students watch videos online and complete the corresponding tests, if students encounter difficulties, teachers can provide answers for students online, and provide targeted guidance according to the completion of students' learning tasks, in order to meet the different learning needs of different students. Educators and school leaders agree that the flipped classroom provides students with a new learning experience and a way to meet the individual learning needs of students. Therefore, it is extremely necessary to carry out flipped classroom teaching in schools.

2.2.1.4 Flipped teaching has been promoted and applied in many countries and regions such as Canada and Singapore. In Girona, Canada, math teacher Raham Johnson and biology teacher Rowling Doll experimented with MOOCs and flipped classrooms during the 2011-2012 school year, and students and parents were impressed. Today, under the initiative of the Singapore government, MOOCs and flipped classrooms have been widely implemented in schools and colleges.

In short, in the relatively open and effective learning environment abroad, flipped classroom has attracted the attention of teachers and school leaders in terms of

improving learning effect and promoting student development. It actively conforms to the development trend of education and boldly explores new teaching

The flipped classroom teaching model is effectively applied to classroom practice. After a period of teaching practice, the teaching value of flipped classroom has been recognized as an effective way to improve teaching quality and student learning efficiency.

2.2.2 Domestic research status:

In 2012, China began to study the flipped classroom teaching model. Zhang Jinlei, Zhang Baohui et al. studied and constructed the teaching mode of flipped classroom, analyzed the dilemma of flipped classroom in China, and laid the foundation for future classroom reform. Zhang Yujiang pointed out in the article "Flipped Classroom Revolution" that according to the survey, most teachers believe that flipped classroom improves their job satisfaction. Although at that time, the relevant literature is not much, but also marked the beginning of the domestic flipped classroom research.

By using CNKI to search related literature with "flipped classroom" as the main topic, there were only 23 articles from 2012, 225 in 2013, 1581 in 2014, 5111 in 2015, 8918 in 2016, and 10700 in 2017. 11,700 in 2018, 11,400 in 2019, 9,077 in 2020, and 6,438 in 2021. From these data, it can be seen that flipped classroom has been paid attention by many education researchers since its introduction in China, and theoretical and practical studies have been conducted in many fields in combination with the national conditions, especially in the field of basic teaching. Some schools and teachers with the courage to explore this new teaching method have made bold attempts and researches, and explored the flipped classroom teaching model suitable for China. Such as Chongqing Jukui Middle School, Shenzhen Nanshan experimental School, etc. In addition, the open online course "Flipped Classroom Teaching Method" hosted by Professor Wang Qiong of Peking University teaching team systematically expounds the theory and teaching methods of flipped classroom, which has played a positive role in promoting the promotion of flipped classroom.

To sum up, the implementation of the flipped classroom teaching model in China is mainly applied to universities and primary and secondary schools. Many educators strive to optimize and develop the original theories and actively participate

in localized teaching practices, which is not only conducive to the improvement of teaching effect, but also promotes the development of the flipped classroom teaching model in China to a certain extent.

2.3 Conceptual Framework

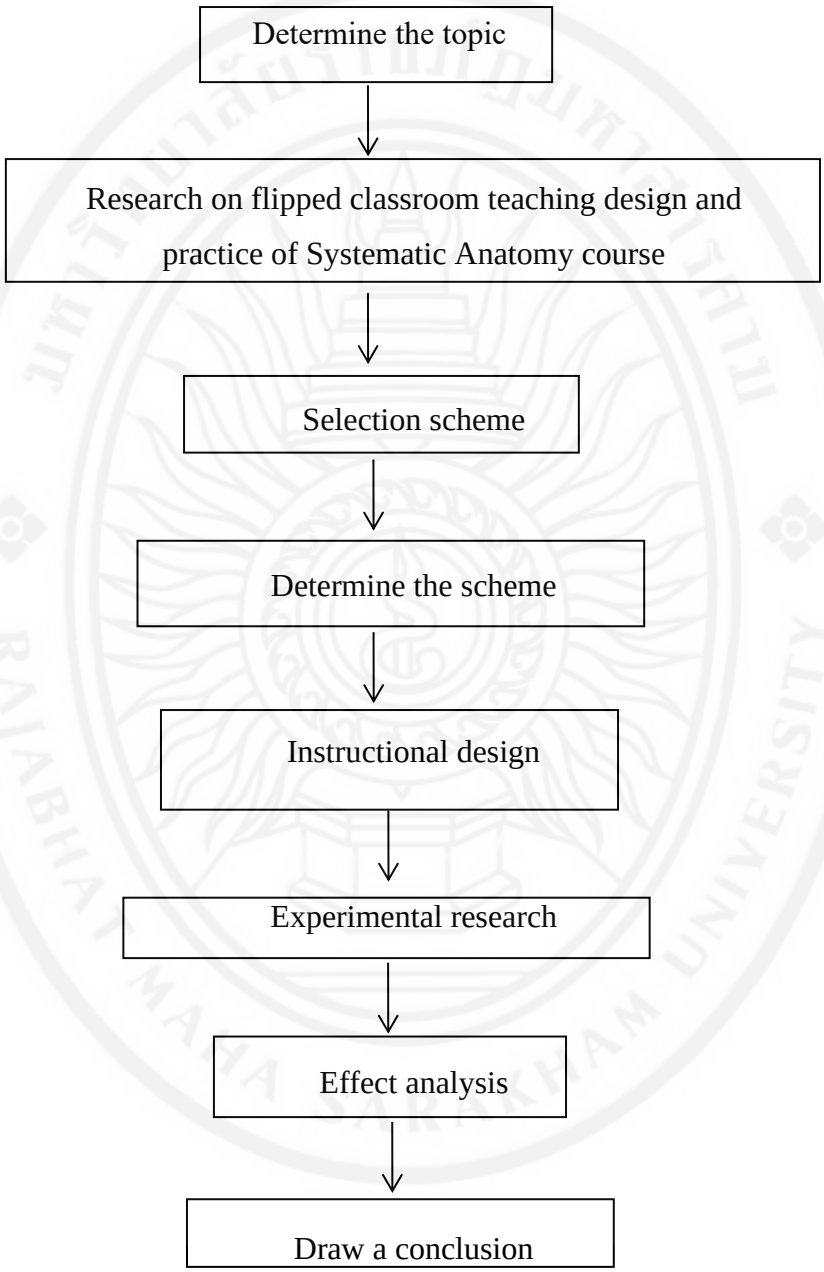


Figure 2.1 Conceptual Framework

CHAPTER 3
RESEARCH METHODOLOGY

This research has the following components.

1. Population and Sample or Target Group
2. Research Tools
3. Creation and quality determination of research tools
4. Data Collection
5. Data Analysis
6. Statics for Data Analysis

3.1 Population and Sample [or Target Group or Key informants]

3.1.1 Population: Grade 2023 freshman of Nursing Department of Luzhou Vocational College of Medical Devices.

3.1.2 Sample: 40 students from Class 1, Nursing Department, Grade 2023, Luzhou Vocational College of Medical Devices

3.2 Research Tools

3.2.1 Use pre-test and post-test to check whether students have mastered the learning content (set 15-20 questions for each chapter according to different chapter contents);

3.2.2 Use the satisfaction questionnaire to observe students' satisfaction evaluation of flipped classroom teaching mode;

3.3 Creation and quality determination of research tools

This paper analyzes the difference between flipped classroom teaching mode and traditional teaching mode and its positive and negative effects on 40 students from Class 1, Grade 2023, Nursing Department of Luzhou Medical Equipment Vocational College after using flipped classroom teaching mode, so as to provide data for flipped classroom teaching of systematic anatomy.

3.3.1 Experimental subjects

40 students from Class 1, Grade 2023, Nursing Department of Luzhou Medical Equipment Vocational College were selected as experimental subjects.

3.3.2 Experimental learning platform

In this study, the online learning platform of systematic anatomy course adopts the online teaching platform "Xueyin Online", which not only has sufficient teaching resources at all levels (videos, pictures, PPT, etc.), but also has unit test, online Q&A and other functions, which can follow up the learning progress of students in real time.

3.3.3 Experimental design

Table 3.1 Experimental design

	Teaching progress	Teacher process	Student process
Teaching process	Pre-class period	1. Upload teaching video and chapter learning task focus and supervise; 2. Complete the chapter pre-test 3. Answer questions before class in the class group	1.Watch teaching videos independently according to teaching priorities; 2.Complete the chapter pre-test 3. Think about the problem, discuss with each other or ask through the class group

(Continued)

Table 3.1 (Continued)

	Teaching progress	Teacher process	Student process
	Mid-class stage	1. Systematically sorting out the teaching content; 2. Explain the key and difficult points, and give unified answers to the questions of students in the class; 3. Organize students to make comments; 4. Organize and consolidate key points and summarize chapter content	1. Review and review the contents and key points of this chapter; 2. Ask the teacher questions; 3. Students discuss independently, summarize key points and discuss difficulties;
	After-school period	1.Teachers answer questions, summarize and reflect, optimize teaching 2.Complete the chapter test post test 3.Summarize and reflect, optimize teaching	1.Conduct post-test of chapter test to check and fill in the gaps 2.Review and consolidate, ask questions, summarize and reflect

3.3.4 Experimental tool

3.3.4.1 Teaching plan

Lesson plan home page

The first class

Table 3.2 Lesson plan home page. The first class.

Course title	Systematic anatomy	grade	freshman	Major and level	Nursing specialty	
instructor	Wenzhong Shen	Class type (large, small)		small	Class hour	3
Lecture topic		Introduction, general osteology				
	Objectives and Requirements: 1, master the definition of systematic anatomy, the human body's standard posture, orientation terminology, axis and plane; Master the classification and structure of bone; 2. Understand the tasks, divisions and development history of systematic anatomy; Understand the surface morphology of bone; Chemical composition and physical properties of bone; Understand the classification of bone connections. 3, familiar with the human body's divisions and organ systems;					
	Teaching focus in class and how to highlight the key points, difficulties and how to break through the difficulties: Key points: Anatomical postures, terms of orientation, axes and planes; Classification and structure of bone; (Understand and remember anatomical posture by the difference between anatomical posture and attention posture; Combine their own examples to explain the terms of orientation and axis, plane, so as to visualize; Explain the structure of bone with pictures) Difficulties: The axis and face of the human body, the structure of the bones. (Using pictures, specimens, combined with the human body itself, in-depth explanation.)					

(Continued)

Table 3.2 (Continued)

Brief summary		Summarize the key content of this lesson: 1. Basic anatomical terms 2. Bone morphology and structure	
Review the questions	A paper	1.	2. Standard anatomical posture description? 3. What does coronal axis mean? 4. What are the categories of bones?
	B paper	1.	2. Standard anatomical posture description? 3. What does sagittal axis mean? 4. What is the horizontal plane?
Preview key points next time		1. Composition of trunk bones 2, the general morphological characteristics of vertebrae and the main morphological characteristics of each vertebrae 3. Position and shape of sternum 4. The connection between the vertebrae, the spine 5. Connection of ribs with sternum and thoracic vertebrae, thorax	
Implementation and analysis			

Table 3.3 Lesson plan home page The second class

Course title	Systematic anatomy	grade	freshman	Major and level	Nursing specialty	
instructor	Wenzhong Shen	Class type (large, small)		small	Class hour	3
Lecture topic		General theory of bone junctions, trunk bones and junctions				

Objectives and Requirements:

1. Master the basic structure and auxiliary structure of synovial joints. The composition of trunk bones, the general morphology of vertebrae and the characteristics of each vertebrae; The shape and division of the sternum and the clinical significance of the sternal Angle, the general shape and classification of the ribs, and the body surface signs of the trunk bones. The morphology and structure of the intervertebral disc, the position and function of the anterior longitudinal and posterior longitudinal ligaments, the position and function of the ligaments flavum, the composition, division and function of the spine, the physiological curvature and movement of the spine, the composition of the thorax, the shape and circumference of the upper and lower thoracic orifices.

2. Understand the classification of bone connections. Morphological characteristics of 1st rib, 11th ~ 12th rib; Overview of intervertebral articulation, names and positions and functions of other intervertebral ligaments, holistic view of the spine, articulation of the ribs to the sternum and thoracic vertebrae, holistic view and movement of the bony thorax, age changes and sex differences.

3. Familiar with the movement and classification of synovial joints.

Teaching focus and how to highlight the key points, difficulties and how to break through the difficulties:

Key: The key content is the content mastered in the purpose requirements. The key content is clearly highlighted in class, and summarized after class, and emphasized again.

(Use pictures to explain the structure of joints; Students are asked to experience joint movements against themselves.)

Difficulties:

The relationship between joint form and function. (Using pictures, specimens, combined with the human body itself, in-depth explanation.)

Brief summary	Summarize the key content of this lesson: 1, the basic structure of the joint 2. The general morphology of vertebrae and the characteristics of each vertebrae 3. Intervertebral disc (location, shape, division, function, significance)	
Review the questions	A paper	1. Main morphological and structural characteristics of vertebrae. 2. The basic composition of synovial joints. 3. Name the bones of the trunk and the bones of the upper limb in sequence 4.Noun definition: articular surface, articular cavity, intervertebral disc.
	B paper	1. Describe the morphological structure of vertebrae according to the general principles of understanding bone. 2. Composition, division and function of the spine. 3. The composition of the thorax and the circumference of the upper and lower mouth. 4. Noun definition: sternal Angle, boundary, arch.
Preview key points next time	1. Composition of upper and lower limb bones 2. Shoulder and elbow joints 3. Hip and knee 4. Composition of the skull 5. Holistic view of the skull 6. Hole fissure of middle cranial fossa 7. Jaw joint 8. Skeletal muscle is classified by morphology 9. Auxiliary structure of muscle	
Implementation and analysis		

Table 3.4 Lesson plan home page. The third class.

Course title	Systematic anatomy	grade	freshman	Major and level	Nursing specialty	
instructor	Wenzhong Shen	Class type (large, small)		small	Class hour	3
Lecture topic		Upper and lower limb bones; The articulation of the upper and lower limbs				

Objectives and Requirements:

1. Master the composition, division and arrangement of the upper limb bones, the morphological characteristics of the clavicle, scapula, humerus, ulna and radius, the composition of the hand bones and the arrangement order of the carpal bones, and the body surface signs of the upper limb bones; The composition, division and arrangement of the lower limb bones, the morphological characteristics of the hip bones, femur, tibia and fibula, the composition of the foot bones and the arrangement order of the tarsi bones, and the body surface signs of the lower limb bones. The composition, structural characteristics and movement of sternoclavicular joint, shoulder joint, elbow joint and radiocarpal joint; The composition and division of the pelvis, the circumference of the upper and lower mouth of the pelvis; The composition, structural characteristics and movement of hip joint, knee joint and taloclower joint; Structure and function of foot arch.

2. Understand the morphological characteristics of hand bone, carpal bone, phalangeal bone, patella, tarsal bone, metatarsal bone and phalangeal bone; The composition, structural characteristics and movement of carpometacarpal joint, metacarpophalangeal joint and interphalangeal joint; Sex differences in the pelvis. Grasp the circumference of the large and small holes of the ischium; The composition and movement of the sacroiliac joint, the intertarsal joint, the tarsometatarsus joint, the metatarsophalangeal joint and the interdigital joint.

Teaching focus and how to highlight the key points, difficulties and how to break through the difficulties: Key: The key content is the content mastered in the purpose requirements. The key content is clearly highlighted in class, and summarized after class, and emphasized again. Difficulty: Structural characteristics of key joints (shoulder, hip, knee). (Comparative teaching of upper and lower limb joints; Joint structural characteristics and function adapt, combined with teaching)

<table>
<tr><td>Implementation and analysis</td><td colspan="2">Summarize the key content of this lesson:
1. Structural characteristics of shoulder and elbow joint
2. Structural characteristics of hip and knee joint</td></tr>
<tr><td rowspan="2">Implementation and analysis
Implementation and analysis</td><td>A paper</td><td>1. Briefly describe the morphological characteristics of scapula.
2. Briefly describe the morphological characteristics of hip bones.
3. Briefly describe the shoulder joint.
4. What are boundaries?
5.There are those ligaments in the knee joint.</td></tr>
<tr><td>B paper</td><td>1. Describe the composition of the pelvis.
2. The shoulder joint is composed of several structures.
3. Try to describe the composition, characteristics and movement of the knee joint.
4. What are the structural components of the elbow joint?
5.What's the difference between a hip and a shoulder.</td></tr>
<tr><td>Implementation and analysis</td><td colspan="2">1. Composition of the skull
2. Holistic view of the skull
3. Hole fissure of middle cranial fossa
4. Jaw joint
5. Skeletal muscle is classified by morphology
6. Auxiliary structure of muscle</td></tr>
<tr><td>Implementation and analysis</td><td colspan="2"></td></tr>
</table>

Table 3.5 Lesson plan home page. The four class

Course title	Systematic anatomy	grade	freshman	Major and level	Nursing specialty	
instructor	Wenzhong Shen	Class type (large, small)		small	Class hour	3
Lecture topic		General introduction to cranial bones and joints and myology				
Objectives and Requirements: grasp 1. Name location of skull separation, cranial top, cranial side, intracranial base, cranial front view (7 foramen and alion of middle fossa) 2. Composition, characteristics and movement of temporomandibular joint. 3. Muscle morphology and structure. Knowledge: 1. Detailed characteristics of each skull 2. External view of skull base, characteristics of newborn skull and postnatal changes 3. Direct connection of the skull 4, muscle start and stop, distribution, function and nomenclature, muscle auxiliary devices.						
Teaching focus and how to highlight the key points, difficulties and how to break through the difficulties: The key content is the content mastered in the purpose requirement. The key content is clearly highlighted in class, and summarized after class, and emphasized again. Difficulties in this section: 1. Separate the shape of the skull 2. The hole fissure of the skull base has many names, diverse forms and complex contents. The correlation between the structures should be emphasized when						

explaining, and the contents involved in the future study should be highlighted when it is closely combined with the clinic.

Combined with CAI courseware, pictures, animation and other multimedia means to teach, fully reflect the characteristics of the form of discipline, using the first look at the picture and then summarize the theory or look at the picture while putting forward the theory, so that students can abandon the book, "look at the picture and talk".

<table>
<tr><td>Implementation and analysis</td><td colspan="2">Summarize the key content of this lesson:
1. The inner view of the skull base and the front view of the skull (especially bony nasal cavity and bony paranasal sinus) are the key points and difficulties.
2, master the general principle of learning muscle: position shape determines functional activities.
Combine muscles and joints to learn, from the point of view of joints, summarize the movement of a joint which muscles to complete.</td></tr>
<tr><td rowspan="2">Implementation and analysis
Implementation and analysis</td><td>A paper</td><td>1. Noun: wing point
2. Which bones are composed of cranium and facial cranium?
3. Bone placement.
The main structure of the intracranial base view is described by drawing.</td></tr>
<tr><td>B paper</td><td>1. What is the structure of the lateral wall of the nasal cavity? How to get around?
2. What is the composition, morphological structure and movement of temporomandibular joint?
3. What are the important bone signs learned in this lesson? And touch on oneself.
The list describes the name, location, and opening of the bony paranasal sinus.</td></tr>
<tr><td>Implementation and analysis</td><td colspan="2">General splanchnography, General splanchnography, digestive ducts</td></tr>
<tr><td>Implementation and analysis</td><td colspan="2"></td></tr>
</table>

Table 3.6 Lesson plan home page. The five class.

Course title	Systematic anatomy	grade	freshman	Major and level	Nursing specialty	
instructor	Wenzhong Shen	Class type (large, small)		small	Class hour	3
Lecture topic		General Splanchnography, Digestive System (1)				
Objective and requirement: To understand the concept of viscera, master the composition of digestive tube, the main structural characteristics of each part and the position and shape of each organ through study.						
Teaching focus and how to highlight the key points, difficulties and how to break through the difficulties: Teaching focus: 1. Master the composition of the digestive tube and the continuous relationship of various organs 2. Master the position and morphological structure of palate, tongue, teeth and oral salivary glands in the mouth 3, master the location of the pharynx, divisions, the main structural characteristics of each department and traffic 4. Master the position, shape, and division of esophagus and stomach, as well as the three narrow positions of esophagus and clinical significance 5. Master the location, shape, division and morphological characteristics of each part of the small intestine and large intestine, and the difference between large and small intestine 6. Master the structural characteristics of the rectal and anal tube walls Teaching difficulties: The continuous relationship of the organs of the digestive tract and the position of each organ in itself. Let the students compare their own body, according to the nine points of abdominal division, according to the description of the textbook, under the guidance of the teacher to understand the position of each organ and mutual relationship.						

Implementation and analysis	Summarize the main content of this lesson: 1. Composition of internal organs 2. Morphological characteristics of oral organs 3. Morphological characteristics of pharyngeal parts 4. Three strictures of the esophagus 5. Morphology, division and location of the stomach 6. The morphological characteristics of the duodenum and its parts 7. Body surface projection of appendix root 8. Structural characteristics of the inner wall of the rectum and anal canal	
Implementation and analysis Implementation and analysis	A paper	1, which kinds of tongue papillae on the mucous membrane, what is the function of each? 2. What are the names, locations and openings of the three pairs of salivary glands in the mouth? 3, noun interpretation: isthmus, dentate line, duodenum
	B paper	1. Explain what in the structure of the digestive tube can prevent the contents of the tube from flowing back? 2. How to distinguish between large and small intestine and empty and ileum during operation? 3. Where is the tender point on the body surface when the appendix is inflamed? What is the way to find the appendix during the operation?
Implementation and analysis		1. Location and morphology of liver 2. Composition and morphological characteristics of extrahepatic biliary tract 3. Position and morphology of pancreas
Implementation and analysis		

Table 3.7 Lesson plan home page. The six class.

Course title	Systematic anatomy	grade	freshman	Major and level	Nursing specialty	
instructor	Wenzhong Shen	Class type (large, small)		small	Class hour	3
Lecture topic		Liver and extrahepatic biliary tract, pancreas				

Objectives and Requirements:

1, master the shape, division, position of the liver and pancreas, the opening of the catheter, the hepatic portal and the hepatic pedicle.

2. Understand the functions of the liver and pancreas, master the composition of the extrahepatic biliary tract, the location, shape, and division of the gallbladder, and the opening of the common bile duct.

Teaching focus and how to highlight the key points, difficulties and how to break through the difficulties:

Teaching focus:

1. Morphology, division, position of liver and pancreas, opening of catheter, hepatic portal and hepatic pedicle.

2. The composition of the extrahepatic biliary tract, the location, morphology, and division of the gallbladder and the opening of the common bile duct.

(Using the advantage of clear pictures on CAI courseware, students can establish an intuitive impression of the key contents. After teaching part of the contents, relevant questions are raised to detect students' mastery of the key contents, and then supplement the contents that students fail to grasp according to specific conditions.)

Teaching difficulties:

Using pictures, combined with their own living position, analysis and explanation.

Implementation and analysis	Summarize the main content of this lesson: 1. Morphology and position of liver 2. Composition of extrahepatic biliary tract and bile emission pathway 3. Location and division of gallbladder and body projection of gallbladder floor	
Implementation and analysis Implementation and analysis	A paper	1. Where is the liver and pancreas? 2. How to judge hepatomegaly on the body surface? 3. Noun explanation: hepatic hilum, hepatic pedicle
	B paper	1. Briefly describe the way of bile production and drainage. 2. When cholecystitis, where is the constant tender point on the body surface? What part of the gallbladder is it? 3. Noun explanation: hilum, root of lung, glottic cleft
Implementation and analysis	1. Composition and function of respiratory system 2. Concept of pleura and pleural cavity. 3. Subdivision of pleura and costodiaphragmatic recess. 4. Body surface projection of pleura and lung.	
Implementation and analysis		

Table 3.8 Lesson plan home page. The seven class.

Course title	Systematic anatomy	grade	freshman	Major and level	Nursing specialty	
instructor	Wenzhong Shen	Class type (large, small)		small	Class hour	3
Lecture topic		Respiratory system				

Objectives and Requirements:

1, master the composition of the respiratory system, the composition of the respiratory tract and the division of the upper and lower respiratory tract.

2. Master the position, shape, lobule, hilum and root of lung.

3. Master the concept of pleura and pleural cavity, division of parietal pleura and costodiaphragmatic recess.

4. Master the body surface projection of the top of the pleura, the apex of the lung, the lower boundary of the pleura and the lower margin of the lung.

5. Understand the concept, boundaries and divisions of the mediastinum.

Teaching focus and how to highlight the key points, difficulties and how to break through the difficulties:

Teaching focus:

1. Composition of respiratory system, composition of respiratory tract and division of upper and lower respiratory tract.

2. Position, shape and lobule of lung, hilum and root of lung.

3. Concept of pleura and pleural cavity, division of parietal pleura, costodiaphragmatic recess.

4. Body surface projection of the roof of the pleura, the apex of the lung, the lower boundary of the pleura and the lower margin of the lung.

(Using the advantage of clear pictures on CAI courseware, students can establish an intuitive impression of the key contents. After teaching part of the contents, relevant questions are raised to detect students' mastery of the key contents, and then supplement the contents that students fail to grasp according to specific conditions.)

Teaching difficulties:

1, the connection of the larynx: including elastic cone, acoustic ligament and glottic fissure and other parts. 2. Concept of mediastinum 3. Location and morphology of costophrenic recess

Implementation and analysis	Summarize the main content of this lesson: 1. Name, location and opening position of four pairs of paranasal sinuses 2. Difference between left and right main bronchus 3. The division of laryngeal cavity and the morphological characteristics of each part 4. Position, morphology and lobulation of lung 5. Concept of pleura and pleural cavity 6. Composition, morphology and position of costophrenic recess 7. Body surface projection of the apex of the pleura, the apex of the lung, the lower boundary of the pleura and the lower margin of the lung	
Implementation and analysis Implementation and analysis	A paper	1. Describe the names, locations and openings of the four pairs of paranasal sinuses. 2. Briefly describe the lung morphology. 3. Noun explanation: hilum, root of lung, glottic cleft
	B paper	1. Division of parietal pleura? Body surface projection of the lower border of the lung and the lower boundary of the pleura? 2. Describe the names, locations and openings of the four pairs of paranasal sinuses. 3. Noun explanation: pleural cavity, costodiaphragmatic recess (sinus)
Implementation and analysis	1. Composition and function of urinary system. 2. Morphological characteristics of various parts of the urinary system. 3, the composition of the male reproductive system and the location and morphological characteristics of each organ	
Implementation and analysis		

Table 3.9 Lesson plan home page. The eight class.

Course title	Systematic anatomy	grade	freshman	Major and level	Nursing specialty	
instructor	Wenzhong Shen	Class type (large, small)		small	Class hour	3
Lecture topic		Urinary system, male reproductive system				
Objectives and Requirements: 1, master the composition of the urinary system, the location of each organ, morphological and structural characteristics. 2. Master the composition of the male reproductive system, the morphology and location of the gonads, and understand their structure. 3, master male sperm pipeline, male urethra division, curvature, expansion and narrowing. 4, master the position of the prostate, foliation, understand its membrane. 5. Understand the composition of the male external genitalia.						
Teaching focus and how to highlight the key points, difficulties and how to break through the difficulties: Teaching focus 1, the shape of the kidney: kidney portal, kidney pedicle. 2. Location and significance of the three strictures of the ureter. 3. Vesical triangle. 4. Composition of the male reproductive system, morphology and location of the gonads. 5, male sperm pipeline, male urethra division, curvature, expansion and narrowing. 6. Location and lobulation of the prostate. Teaching difficulty 1. Location and capsule of kidney. 2. Lobules of the prostate. 3. Male external genitalia						

Implementation and analysis	Summarize the main content of this lesson: 1. Morphology and structure of kidney 2. The capsule of the kidney 3. Three strictures of the ureter 4. Vesical triangle 5. Composition of the male reproductive system 6, the division of the vas deferens and the morphological characteristics of each department 7. Concept of spermatic cord 8. Divisions of the male urethra, three enlarged, three narrow, and two curved	
Implementation and analysis	A paper	1. Three strictures of ureter and their clinical significance. 2. Describe the morphological characteristics of kidney and bladder. 3. Noun explanation: vesical triangle
Implementation and analysis	B paper	1. Male renal pelvis stone excretion can be blocked in what part? 2. Which vas deferens are divided into? Where is the ligature performed? 3. Noun explanation: renal portal, renal sinus
Implementation and analysis	1. Female reproductive system 2. Position and shape of the breast 3. Concept, boundary and division of perineum 4. The concept of peritoneum and peritoneal cavity, the formation of peritoneum 5, the composition of the endocrine system and the position, shape and function of each endocrine gland	
Implementation and analysis		

Table 3.10 Lesson plan home page. The nine class.

Course title	Systematic anatomy	grade	freshman	Major and level	Nursing specialty	
instructor	Wenzhong Shen	Class type (large, small)		small	Class hour	3
Lecture topic		Female reproductive system, breast, perineum, peritoneum, endocrine system				
Objectives and Requirements: 1. Master the composition of the female reproductive system, the form and location of the gonads, and understand their structure; The tube through which a woman carries her sperm and eggs. ; Location and division of the fallopian tube, location, morphological division and fixation of the uterus. Position of vagina, composition of vaginal dome and clinical significance. The location, shape and structure of the breast, and the lymphatic drainage of the breast. The concept of peritoneum and peritoneal cavity, the relationship between peritoneum and abdominal and pelvic organs, the location and division of lesser omentum, the location and composition of greater omentum, the location of omental sac and omentum foramen, and the name and location of peritoneal depression. Morphology and location of pituitary gland, thyroid gland, parathyroid gland, adrenal gland, pineal gland. 2. Understand the composition of the female external genitalia. The concept and boundary of the perineum, partition, understanding the muscles and fascia of the perineum. The function of the peritoneum, the name, location and attachment of the mesanges, the name and location of the ligaments of the liver, spleen and stomach, the peritoneal folds and recesses. Composition, structural characteristics and functions of endocrine glands.						
Teaching focus and how to highlight the key points, difficulties and how to break through the difficulties: Teaching focus: 1. Composition of the female reproductive system, morphology and location of the gonads. 2, the female transport sperm, egg pipeline.						

3, the location and division of the fallopian tube, the location of the uterus, the morphological division and the fixation device. 4, the position of the vagina, the composition of the vaginal dome and clinical significance. 5. Location, shape and structure of the breast. 6. The concept of peritoneum and peritoneal cavity, the relationship between peritoneum and abdominal and pelvic organs, the location and division of lesser omentum, the location of omental sac and omental foramen, and the name and location of peritoneal depression. 7. Morphology and location of pituitary gland, thyroid gland, parathyroid gland, adrenal gland and pineal gland. (Using CAI courseware, combined with the classroom drawing sketch, using the method of comparative memory, the key content will be explained deeply and thoroughly, to help students master the key content.)

Teaching difficulties:

1, the position and function of the periuterine ligaments 2, the female external genitalia 3, the muscles and fascia of the perineum 4, the lymphatic return pathway of the breast 5, the location and proximity of the omental sac

(Using pictures and models, combined with experimental specimen observation; After the teacher finishes the lecture, students will ask questions about the parts they do not understand, and then the teacher will guide the students to solve the problems to break through the difficulties.)

Implementation and analysis	Summarize the main content of this lesson: 1. Overview of the composition of female reproductive system 2. Ovary morphology and fixation devices 3, the division of the fallopian tube and the morphological characteristics of each part 4. The shape, position and fixation of the uterus 5. Composition and clinical significance of vaginal dome 6. Location, shape and structure of the breast 7. Concept, realm and division of perineum 8. Concept of peritoneum and peritoneal cavity 9. Classification of abdominal and pelvic organs 11. Peritoneal structures 12. Position, morphology and function of the glands of the endocrine system	
Implementation and analysis Implementation and analysis	A paper	1. What is the position and function of the female gonads? 2. Which fallopian tubes are divided into? Where is the ligature performed? Look for signs of the fallopian tube when ligation 3. Which ligaments should be distinguished from when ligation fallopian tubes? 4. What are the channels through which egg cells are discharged from the body? Describe the normal position of the uterus and the device for maintaining the normal position of the uterus.
	B paper	1. Noun explanation: vaginal dome 2. Describe the position and morphological characteristics of the breast. 3. What is peritoneum? What is a peritoneal cavity?

		4. Briefly describe the formation, division and structure of the lesser omentum. 5. Describe the position and morphology of the thyroid gland.
Implementation and analysis	General vasculature Introduction to the cardiovascular system The position and shape of the heart The inner cavity of the heart The structure of the heart wall the conduction system of the heart Cardiac vessels pericardium	
Implementation and analysis		

4.2 Pre-test and post-test

Table 3.11 Pre-test and post-test

Pre-test	According to the teaching contents of 5 chapters in systematic anatomy (motor system, respiratory system, digestive system, urinary system, reproductive system), relevant tests on the mastery of basic knowledge points in each chapter are conducted before the beginning of the course to confirm that all students' scores are not qualified and there is no significant difference in their scores.
Post-test	After the teaching of each chapter, chapter test will be conducted based on the pre-test content and the emphasis before class to understand the respondents' grasp of the course knowledge after participating in flipped classroom, and assessment will be conducted by asking questions or multiple-choice questions.

4.3. Questionnaire

The respondents were asked to evaluate their experience of participating in flipped classroom, including their satisfaction with teaching methods and course

participation. Respondents' opinions and suggestions on flipped classroom teaching, including feedback on teacher design, evaluation of pre-class materials and suggestions for future improvement, are solicited as follows:

Academic satisfaction Questionnaire for management, learning/teaching activities

Instructions: Mark the box corresponding☑ to the satisfaction level above.

5 = very high 4 = high 3 = medium 2 = low 1 = very low

content	satisfaction				
	5	4	3	2	1
1. How much do you know about flipped classroom teaching mode before this chapter?					
2.Do you like the current flipped classroom model?					
3.Do you think it is difficult to study autonomously before class?					
4.In the pre-flipped classroom learning stage, how well do you master theoretical knowledge?					
5. Do you think there is enough interaction between teachers, students and students in flipped classroom?					
6.How efficient do you think you are after learning in flipped classroom?					
7.Compared with the traditional teaching mode, do you think the flipped classroom teaching mode is more effective?					
8.Do you think Systematic Anatomy is suitable for the teaching of flipped classroom?					
9. If given the opportunity, would you use flipped classroom teaching model to learn other courses?					

content	satisfaction				
	5	4	3	2	1
10. Can you master the basic content of this chapter through pre-class study?					
Total Score					

Additional comments or suggestions, if any.

3.4 Data Collection

The data of 40 students in the experimental group and the control group were collected and analyzed before and after class according to the mastery of the same chapter content and test scores.

3.5 Data Analysis

3.5.1. Organize and analyze the data collected by the questionnaire

3.5.2 Organize test results into tables for data analysis

3.5.3 spss was used to analyze the experimental data

3.6 Statics for Data Analysis

Calculate t value from formula

$$t = \frac{\sum D}{\sqrt{\frac{n\sum D^2 - \left(\sum D\right)^2}{n-1}}} \quad (3\text{-}1)$$

Symbols used in and present the results of data analysis

t = Statistical values to be used for comparison

D = The difference between the pairs of scores

$\sum D$ = The sum of the difference in scores after the first buck

$\sum D_2$ = The sum of the difference in scores after the first bug at each character

N = Number of samples

$\bar{X}$ = Average

S.D. = Standard deviation

CHAPTER 4
RESEARCH RESULTS

4.1 Research results found

This research used the academic achievement test and survey required in the research. Achievement testing consists of pre- and post-research tests to measure changes in student achievement before and after the research. were carried out on 5 chapters of "motor system", "digestive system", "respiratory system", "urinary system" and "reproductive system" in the course of Systematic Anatomy

From the test to measure academic achievement by analyzing scores. In the first and subsequent trials Let's compare the average scores of the two tests. The average academic achievement test scores were significantly different from the experimental group. Second test results Significantly higher than the first test results.

4.2 Symbols used in and present the results of data analysis

t	=	Statistical values to be used for comparison
D	=	The difference between the pairs of scores
$\sum D$	=	The sum of the difference in scores after the first buck
$\sum D_2$	=	The sum of the difference in scores after the first bug at each character
N	=	Number of samples
$\bar{X}$	=	Average
S.D.	=	Standard deviation

Calculate t value from formula

$$t = \frac{\sum D}{\sqrt{\frac{n\sum D^2 - \left(\sum D\right)^2}{n-1}}} \qquad (4\text{-}1)$$

4.3 Analysis data

The results of the analysis to determine the efficiency of study skills training according to the 70/70 criteria has the following details:

	Before (70 point)	After (70 point)		D		D^2
Sum	1790.00	3059.00	$\sum D$	1269.00	$\sum D^2$	40529.00
Average	44.75	76.48	$\left(\sum D\right)^2$	1610361.00		
S.D.	5.43	4.42				
n	40					

Substitute the values in the formula to get

$$t = \frac{1269.00}{\sqrt{\frac{1621160 - 1610361.00}{39}}}$$

$$t = \frac{1269.00}{16.64}$$

$$t = 76.26$$

The value of t from the t distribution table is equal to 1.68

Statistical decision making

76.26 more than 1.68

Table 4.2 Therefore, the score after studying Higher than before studying with statistical significance Summarized in a table as follows.

Test	n	Full score	$\overline{X}$	S.D.	t - test
Before	40	70	44.75	5.43	76.26
After	40	70	76.48	4.42	

It was found that the development of students' knowledge and understanding was different. Students tested according to integrated learning activities have knowledge. Understand and be able to take the exam higher than before Make the students' educational behavior according to their wishes and their achievement after teaching is higher than before learning according to the academic achievement development standards. Improve academic achievement by 70% or more.

4.4 Satisfaction questionnaire

Table 4.3 Mean ($\overline{X}$) Standard deviation (S.D.) Academic satisfaction Questionnaire for management, learning/teaching activities.

No.	questionnaire for management, learning/teaching activities	$\overline{X}$	S.D.	Description
1	How much do you know about flipped classroom teaching mode before this chapter?	3.05	0.31	medium
2	Do you like the current flipped classroom model?	4.65	0.48	High
3	Do you think it is difficult to study autonomously before class?	3.20	0.40	medium
4	In the pre-flipped classroom learning stage, how well do you master theoretical knowledge?	3.12	0.33	medium

(Continued)

Table 4.3 (Continued)

No.	questionnaire for management, learning/teaching activities	$\bar{X}$	S.D.	Description
5	Do you think there is enough interaction between teachers, students and students in flipped classroom?	4.45	0.50	High
6	How efficient do you think you are after learning in flipped classroom?	4.37	0.49	High
7	Compared with the traditional teaching mode, do you think the flipped classroom teaching mode is more effective?	4.52	0.50	High
8	Do you think Systematic Anatomy is suitable for the teaching of flipped classroom?	4.40	0.49	High
9	If given the opportunity, would you use flipped classroom teaching model to learn other courses?	4.35	0.48	High
10	Can you master the basic content of this chapter through pre-class study?	4.02	0.47	high
	Total	4.01	0.44	high

Analysis results sorted by every item from highest to lowest as follows: Do you like the current flipped classroom model. ($\bar{X}$ = 4.65). Compared with the traditional teaching mode, do you think the flipped classroom teaching mode is more effective. ($\bar{X}$ = 4.52). Do you think there is enough interaction between teachers, students and students in flipped classroom. ($\bar{X}$ = 4.45). Do you think Systematic Anatomy is suitable for the teaching of flipped classroom. ($\bar{X}$ = 4.40). How efficient do you think you are after learning in flipped classroom. ($\bar{X}$ = 4.37). If given the opportunity, would you use flipped classroom teaching model to learn other courses. ($\bar{X}$ = 4.35). Can you master the basic content of this chapter through pre-class study. ($\bar{X}$ = 4.02). Do you think it is difficult to study autonomously before class. ($\bar{X}$ = 3.20). In the pre-flipped classroom learning stage, how well do you master theoretical knowledge. ($\bar{X}$ = 3.12). How much do you know about flipped classroom teaching mode before this chapter. ($\bar{X}$ = 3.05).

CHAPTER 5
CONCLUSION, DISCUSSION AND RECOMMENDATIONS

5.1 Conclusion

The purpose of this study is to Developing of academic achievement in systematic anatomy course through the flipped classroom teaching approach of first grade student at Luzhou Vocational College of Medical Devices to compare academic achievement scores between before and after using the flipped classroom teaching approch of students.

The target group is Grade 2023 freshman of Nursing Department of Luzhou Vocational College of Medical Devices by use pre-test and post-test to check whether students have mastered the learning content and use the satisfaction questionnaire to observe students' satisfaction evaluation of flipped classroom teaching.

Analyzes the difference between flipped classroom teaching mode and traditional teaching mode and its positive and negative effects on 40 students from Class 1, Grade 2023, Nursing Department of Luzhou Medical Equipment Vocational College after using flipped classroom teaching mode, so as to provide data for flipped classroom teaching of systematic anatomy. Summary of research results as follows:

5.1.1 Study behavior before and after the experiment improved. Students are satisfied with the improved use of comprehensive learning activities in the curriculum.

5.1.2 Results from the Develop the ability students' knowledge of Developing of academic achievement in systematic anatomy course through the flipped classroom teaching approach curriculum meets the curriculum standards.

5.1.3 Results from the Develop the ability students' knowledge of Developing of academic achievement in systematic anatomy course through the flipped classroom teaching approach before and after the experiment were different

5.2 Discussion of research results

Results of this study Shows differences in the development of academic achievement. After using integrated learning activities in the Developing of academic achievement in systematic anatomy course through the flipped classroom teaching approach which the researcher discussed the results of data analysis in the research are as follows:

5.2.1 Achievements of integrated learning activities in the develop the ability students' knowledge of military theory efficiency through integrated activity based learning methodsaccording to the curriculum criteria significantly statistics at the .05 level show that students have developed knowledge. Understanding of the content of the lesson and the purpose of learning better than before studying. Show that students have developed knowledge. Understanding of the content of the lesson and the purpose of learning better than before studying. (Student academic performance is above standard standard is 70% or more).

5.2.2 Achievement in studies after using the flipped classroom, According to suggested activities and tools of participatory learning The researcher found that happy students and have fun with the activities provided Students learn that The theoretical part that has been studied If practical skills are used according to the suggested activities allow students to exchange experiences. It is something that makes students enthusiastic, understand the lesson and be able to remember it and what students normally learn in their daily lives about and students are happy and have fun with participatory learning plan activities as well.

5.2.3 The experimental group had 40 people with test results before Develop the ability of Developing of through the flipped classroom 44.75 percent and test results after Developing of through the flipped classroom through 76.48 percent. which passed Criteria 70 percent of full score.

5.2.4 Questionnaire on learners' satisfaction with teaching activity management analysis results sorted by every item from highest to lowest as follows: Do you like the current flipped classroom model. ($\bar{X}$ = 4.65). Compared with the traditional teaching mode, do you think the flipped classroom teaching mode is more effective. ($\bar{X}$ = 4.52).

Do you think there is enough interaction between teachers, students and students in flipped classroom. ($\bar{X}$ = 4.45). Do you think Systematic Anatomy is suitable for the teaching of flipped classroom. ($\bar{X}$ = 4.40). How efficient do you think you are after learning in flipped classroom. ($\bar{X}$ = 4.37). If given the opportunity, would you use flipped classroom teaching model to learn other courses. ($\bar{X}$ = 4.35). Can you master the basic content of this chapter through pre-class study. ($\bar{X}$ = 4.02). Do you think it is difficult to study autonomously before class. ($\bar{X}$ = 3.20). In the pre-flipped classroom learning stage, how well do you master theoretical knowledge. ($\bar{X}$ = 3.12). How much do you know about flipped classroom teaching mode before this chapter. ($\bar{X}$ = 3.05).

5.3 Recommendations Research

5.3.1 Teaching and learning suggestions

5.3.1.1 Learning management using the flipped classroom concept Activity formats should be organized to suit the duration of each class period. Therefore, teachers should control the duration to suit the activity. However, the duration of organizing learning activities can be flexible as appropriate, for example, some activities take a lot of time. The teacher therefore allows some groups of students to be representatives in doing activities or presenting their work. In order for students to gain complete knowledge from organizing activities and everyone participated in the learning activities effectively.

5.3.1.2 Learning management using the flipped classroom concept Some students do not study or are interested in online lessons, so teachers should use asking questions, demanding questions, and stimulating students. So that students can access the lessons that the teacher sets.

5.3.1.3 Education in today's era is full of technology, easy access and variety. Teachers should provide opportunities for students to study information. and a variety of answers And always take into account that information sources may contain both reliable information and unreliable Therefore, students must know how to apply

analytical skills, evaluate judgments, and know how to examine information accessed from a variety of learning sources.

5.3.2 Suggestions for research

5.3.2.1 There should be a study of the effects of learning management using the flipped classroom concept on other variables such as collaborative skills, problem-solving skills. Online media skills and life skills, etc.

5.3.2.2 In the next research, results should be compared. Theoretical learning and practical skills of students during teaching to develop academic achievement through integration with other teaching methods.

5.3.2.3 In the next research, research and learning achievement should be integrated through the internet network.

5.3.2.4 Research should be done on teaching integrated with other subjects or other grade levels to study the academic achievement and attitude towards learning of students.

5.3.2.5 The relationship between media literacy and students' learning ability should be studied.

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APPENDIXS

Analysis to determine the efficiency of study skills training according to the 70/70 criteria

		Before (70 Point)	After (70 Point)		D		D^2
1		39.00	72.00		33.00		1089.00
2		41.00	79.00		38.00		1444.00
3		46.00	76.00		30.00		900.00
4		41.00	74.00		33.00		1089.00
5		41.00	74.00		33.00		1089.00
6		42.00	76.00		34.00		1156.00
7		38.00	75.00		37.00		1369.00
8		36.00	71.00		35.00		1225.00
9		41.00	75.00		34.00		1156.00
10		39.00	71.00		32.00		1024.00
11		37.00	72.00		35.00		1225.00
12		46.00	76.00		30.00		900.00
13		51.00	81.00		30.00		900.00
14		45.00	75.00		30.00		900.00
15		39.00	71.00		32.00		1024.00
16		57.00	81.00		24.00		576.00
17		52.00	82.00		30.00		900.00
18		41.00	72.00		31.00		961.00
19		46.00	75.00		29.00		841.00
20		41.00	72.00		31.00		961.00
21		46.00	77.00		31.00		961.00
22		39.00	72.00		33.00		1089.00
23		47.00	75.00		28.00		784.00
24		51.00	83.00		32.00		1024.00
25		50.00	83.00		33.00		1089.00
26		39.00	74.00		35.00		1225.00
27		47.00	77.00		30.00		900.00
28		46.00	78.00		32.00		1024.00
29		45.00	76.00		31.00		961.00
30		41.00	72.00		31.00		961.00
31		42.00	73.00		31.00		961.00
32		49.00	77.00		28.00		784.00
33		41.00	74.00		33.00		1089.00
34		56.00	87.00		31.00		961.00
35		51.00	86.00		35.00		1225.00
36		46.00	74.00		28.00		784.00
37		49.00	79.00		30.00		900.00
38		57.00	88.00		31.00		961.00
39		48.00	79.00		31.00		961.00
40		41.00	75.00		34.00		1156.00
	Sum	1790.00	3059.00	$\sum D$	1269.00	$\sum D^2$	40529.00
	Avarage	44.75	76.48	$(\sum D)^2$	1610361.00		
	S.D.	5.43	4.42				
	n	40					

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