**EFFECT OF PROBLEM-BASED LEARNING (PBL) ON MUSIC TEACHING
SCHEME DESIGN AND TEACHING PRACTICE OF MUSIC TEACHER
STUDENTS AT ZHOUKOU NORMAL UNIVERSITY**

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**A THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE
REQUIREMENTS
FOR THE DEGREE OF MASTER OF EDUCATION
IN CURRICULUM AND INSTRUCTION
GRADUATE SCHOOL
VALAYA ALONGKORN RAJABHAT UNIVERSITY
UNDER THE ROYAL PATRONAGE PATHUM THANI
2022**

การเรียนรู้โดยใช้ปัญหาเป็นฐาน (PBL) มีผลต่อการออกแบบรูปแบบการสอนดนตรีศึกษาและการ
ฝึกปฏิบัติการสอนของนักศึกษาครูดนตรีที่ Zhoukou Normal University

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พ.ศ. 2565

THESIS APPROVAL
GRADUATE SCHOOL
VALAYA ALONGKORN RAJABHAT UNIVERSITY
UNDER THE ROYAL PATRONAGE PATHUM THANI

Thesis Title	Effect of Problem-Based Learning (PBL) on Music Teaching Scheme Design and Teaching Practice of Music Teacher Students at Zhoukou Normal University
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บทคัดย่อ

การวิจัยนี้เป็นการวิจัยเชิงทดลอง มีวัตถุประสงค์เพื่อ 1) เปรียบเทียบการออกแบบโครงการสอนดนตรี กับผลสัมฤทธิ์ทางการเรียนการสอนของนักศึกษาชั้นปีที่ 3 ก่อนและหลังการใช้การเรียนรู้โดยใช้ปัญหาเป็นฐาน และ 2) ประเมินความพึงพอใจของนักศึกษาต่อการเรียนรู้โดยใช้ปัญหาเป็นพื้นฐาน กลุ่มตัวอย่างของการศึกษานี้ คือ นักศึกษาจีน 42 คน วิชาเอกดนตรีศึกษา ระดับปริญญาตรี Zhoukou Normal University ประเทศสาธารณรัฐ ประชาชนจีน การศึกษานี้ใช้การสุ่มตัวอย่าง แบบแบ่งกลุ่ม เครื่องมือที่ใช้ในการวิจัย ได้แก่ แผนการสอนการจัดการ เรียนรู้ออกแบบโครงการสอนดนตรีและการฝึกปฏิบัติโดยใช้การสอนแบบ การเรียนรู้โดยใช้ปัญหาเป็นฐาน เครื่องมือในการวิจัย ได้แก่ 1) แผนการสอนการออกแบบโครงการสอนดนตรีและแบบทดสอบผลสัมฤทธิ์ทางการ เรียน และ 2) แบบสอบถามความพึงพอใจของนักศึกษาวิเคราะห์ข้อมูลโดยใช้สถิติทดสอบทีสำหรับกลุ่มตัวอย่างที่ไม่ เป็นอิสระต่อกันด้วยโปรแกรมสำเร็จรูปทางสถิติ

ผลการวิจัยพบว่า 1) การออกแบบโครงการสอนดนตรีและผลสัมฤทธิ์ทางการเรียนการฝึกสอน ของนักเรียนหลังใช้การเรียนรู้โดยใช้ปัญหา เป็นฐานสูงกว่าก่อนการเรียนรู้ อย่างมีนัยสำคัญทางสถิติที่ระดับ 0.05 และ 2) ความพึงพอใจของนักเรียนต่อวิธีการจัดการเรียนรู้โดยใช้ปัญหาเป็นฐานอยู่ในระดับสูง

องค์ความรู้ที่ได้จากการวิจัยในครั้งนี้ คือ การเรียนรู้โดยใช้ปัญหาเป็นฐาน (PBL) ที่มีการกำหนด ให้วิเคราะห์และแก้ปัญหา นำผลการแก้ปัญหามาสะท้อนความคิดช่วยให้นักศึกษามีผลสัมฤทธิ์ทางการเรียน วิชาดนตรีสูงขึ้น โดยเฉพาะทางด้านการสะท้อนความคิดที่อยู่ในการเรียนรู้โดยใช้ปัญหาเป็นฐาน (PBL) จะทำให้ ผู้เรียนมีผลสัมฤทธิ์ทางการเรียนวิชาดนตรีสูงขึ้น

คำสำคัญ : การเรียนรู้จากโดยใช้ปัญหาเป็นฐาน (PBL) ผลสัมฤทธิ์ทางการเรียน ความพึงพอใจของนักเรียน การออกแบบโครงการสอนดนตรีและการฝึกปฏิบัติ

ABSTRACT

The study was an experimental research. The purposes of this research were 1) to compare the music teaching scheme design with the practicum learning achievement of the third-year university students both before and after using Problem-Based Learning (PBL), and 2) to assess the students' satisfaction with Problem-Based Learning (PBL). The sample of this study included 42 Chinese students majoring in Musicology of undergraduate level at Zhoukou Normal University, Republic of China. Cluster random sampling was used in this study. The research instruments were the lesson plans of music teaching scheme design and the practicum using PBL pedagogy. The instruments for measuring were 1) the music teaching scheme design and the practicum learning achievement test, and 2) the questionnaire for students' satisfaction. After collecting and arranging the experimental data, the paired-sample t-test of statistical package program was used for data analysis.

The results showed that: 1) the music teaching scheme design and the practicum learning achievement of students after using Problem-Based Learning (PBL) was significantly higher than before the learning, and 2) students' satisfaction towards Problem-Based Learning (PBL) method was at the high level at 0.05.

The knowledge gained from this research indicates the Problem-Based Learning (PBL) method, focusing on analyzing, solving the problems, and applying the results of research to reflect students' thoughts, helped students to have higher achievement in music teaching.

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

LIST OF TABLES

Page

CHAPTER 1
INTRODUCTION

1.1 Introduction

It was the mission and responsibility of normal university to train teachers. All countries paid great attention to the training of teachers, and have introduced many specific measures to promote the development of normal universities and ensured the improvement of teachers' quality (Tian, 2009). The development of music education had a long way to go. The development and improvement of the whole education system not only required a large number of pioneering leaders with both political integrity and ability, but also a number of teaching talents which arm their minds with knowledge (Liu, 2012). The development of music education was an important part of the national comprehensive quality improvement, with the development of social and continuous progress of human knowledge system, education work was facing the impact of knowledge update tide and severe social situation, how to develop music education, how to keep pace with the times, how to maintain and carry forward the inheritance of traditional national culture while nourishing foreign art, was worth every subject of music educators in-depth study (Xiao, 2014)

" Music Teaching Scheme Design and Teaching Practice" belonged to the practical discipline in the school music education discipline system, was a university undergraduate teacher education major (musicology) required course. The basic principles of music education and the practical analysis of music education phenomenon, optimize the music teaching theory and practice, to lay a solid foundation for training middle school and primary school music teachers.

As a very important degree course, the teaching effect of " Music Teaching Scheme Design and Teaching Practice" and the training mode of talents are becoming more and more important. The existing teaching is usually based on the theory of Herbart pedagogy. The implementation process is to impart knowledge directly to students, while the main form of teaching mode is class teaching system. Since the Industrial Revolution, this model has been the most stable and widely used teaching model in the global education system. It has been used for more than 300 years, and there are many problems in the process of practice (Chen & Sun, 2021).

Traditional classroom teaching has the following problems:

1) Teachers in preparing lessons, first consider how teachers teach, teachers have a strong sense of the protagonist, performance desire is too strong (" New curriculum ideas", 2021). Teachers often regard the teaching process as the process of students cooperating with teaching to complete the teaching plan, to a certain extent, they ignore the existence of students as the main body of learning, and ignore that students are important curriculum resources.

2) Teacher is the faithful executor of the textbook, how to write on the textbook, the teacher will say. Many teachers regard the teaching material as the golden rule, dare not cross the thunder pool one step, regard the teaching material content without omission, do not offside as the classroom teaching purpose, make the teaching material become the shackles that imprison the student to create freely, bold innovation("New curriculum ideas", 2021).

3) The traditional classroom teaching, the students' learning style is single and passive, and the students' learning style mainly embodies individuality, between teachers and students, students are often in a state of tension or even opposition. In traditional teaching, teachers are responsible for teaching, students are responsible for learning, and teaching is a one-way " training" activity for students. The teaching relationship is: I say, you listen; I ask, you answer; I write, you copy; I give, you receive (Wang, 2002).

The following problems exist in the classroom teaching of Music Teaching Scheme Design and Teaching Practice:

1) Students' theoretical knowledge learning is very solid, but they lack teaching experience, and the actual teaching level is not high. As shown in Figure 1.

2) Students had no high interest in learning in class.

3) Students lacked the ability to learn actively.

By checking the student's scores in the school's teaching management system, it was found that after the music teaching plan design and teaching practice course in the first semester of the 2020-2021 school year, 88.9% of the students in the sample class scored below 80 points. Therefore, the teaching effected of this course was not ideal.

In order to change this phenomenon, we must expand the teaching research of this course and conducted teaching exploration combined with the new teaching mode. Problem-Based Learning (PBL) teaching mode is a teaching mode with teacher-led, problem-centered and students as the main body, which emphasizes the students to solve practical problems through cooperative exploration (LI, n. d.) . Students could obtain new knowledge in the process of analyzing and solving problems, and improved the independent learning ability while experiencing the sense of achievement of learning knowledge, so as to stimulate students' interest in learning (Zhang, 2017). The application of Problem-Based Learning (PBL) teaching mode in the course "Music Teaching Scheme Design and Teaching Practice" is beneficial for students to pool their wisdom through cooperative learning with others, which can well solve the more complex problems in the learning process, deepen their understanding of teaching scheme design, improved students' teaching practice level and improve classroom teaching effect.

Problem-Based Learning (PBL) had the following advantages:

1) Problem-Based Learning (PBL) teaching method made students' learning exploratory and active. The traditional indoctrination teaching was generally "teacher

speaking, students listening" , this way was teacher-centered, knowledge-based, students were in a passive position, students could only followed the teacher to learn knowledge and learn, could not gave play to the exploration and initiative of students (Cui, He, Wang & Li, 2009). Problem-Based Learning (PBL) teaching method was student-centered, problem-based, students through discussion, data and other ways to obtain solutions to problems and answered, which made students' learning from passive to active, from blind to purposeful to explore the answers to questions and the essence of the active exploration process.

2) Problem-Based Learning (PBL) teaching method made students' learning problematic and participatory. Problem-Based Learning (PBL) teaching method was based on problems to organize students to learn, it required students to learn through or around problems, problems became the motivation of students to learn and developed comprehensive thinking ability and problem-solving ability materials. Students not only acquire knowledge, but also learned to solve problems through the exploration and solution of problems (Yang et al., 2011); At the same time, the exploration of problem-solving had become the process for students to explore, asked about problems and solve problems (Ji, 2012). The student-centered teaching method requires students to be the main body of classroom teaching, so that students can participate in the process of teaching and learning, and could maximize the students' initiative and creativity. It was beneficial to the cultivation of real understanding and mastery of knowledge and various abilities (Zhao et al., 2019).

3) Problem-Based Learning (PBL) teaching method could stimulate students' interest in learning and cultivated the ability to think and solved problems. Problem-Based Learning (PBL) teaching method was the beginning of the curriculum put forward problems, students with problems to learn, interested in solving these problems, would change passive learning into active participation and exploration, students through the knowledge of questioning, judgment, comparison, choice and analysis, synthesis, generalization and other cognitive activities, through a variety of thinking and cognitive ways to obtain problem-solving. In fact, students gradually acquired comprehensive thinking and problem-solving ability process (Hu, 2013).

In summary, in order to improve the mismatch between the theory and practice of students, increase students' interest in learning, and strengthen their active learning ability, this research applied the Problem-Based Learning (PBL) teaching model to the teaching of the course "Music Teaching Scheme Design and Teaching Practice" in ordinary colleges and universities. By designing the PBL teaching model of the course "Music Teaching Scheme Design and Teaching Practice", using this course as a case for teaching implementation, obtaining students' pre-test and post-test achievement and student satisfaction, thereby verifying the feasibility and effectiveness of Problem-Based Learning (PBL) teaching mode in the normal university music courses, analyzed the application effect of Problem-Based Learning (PBL) teaching mode in music teaching practice of ordinary colleges and universities,

and provided new theoretical basis and practical experience for music teaching reform.

1.2 Research Questions

1.2.1 How does Problem-Based Learning (PBL) effective the Music Teaching Scheme Design and Teaching Practice learning achievement before and after receiving Problem-Based Learning (PBL) teaching?

1.2.2 How does Problem-Based Learning (PBL) effect students' satisfaction after receiving Problem-Based Learning (PBL) teaching?

1.3 Research Objective

1.3.1 To compare the Music Teaching Scheme Design and Teaching Practice learning achievement of the third-year university students before and after using Problem-Based Learning (PBL).

1.3.2 To assess the students' satisfaction on Problem-Based Learning (PBL).

1.4 Research Hypothesis

1.4.1 The Music Teaching Scheme Design and Teaching Practice learning achievement of students after using Problem-Based Learning (PBL) was higher than before the learning.

1.4.2 Students' satisfaction toward Problem-Based Learning (PBL) method was at the high level.

1.5 Delimitation of the Study

1.5.1 Population and Sample

1.5.1.1 The population in this study was 198 students majoring in Musicology of undergraduate level at Zhoukou Normal University, China.

1.5.1.2 The sample of this study was 42 third year musicology students at Zhoukou Normal University.

1.5.2 Variables

Independent variable was problem-based learning.

Dependent variables were the achievement of students learning using PBL on Music Teaching Scheme Design and Teaching Practice in university and students' satisfaction.

1.5.3 Area of content was Music Teaching Scheme Design and Teaching Practice in university.

It was a strong practical discipline in the school music education discipline system; It was a required course in undergraduate musicology (teacher education), based on the basic principles of music education and practical analysis of music education phenomenon, optimized the music teaching practice to provide theoretical and practical guidance for the school music education teaching, with a high unity of knowledge and skills, theory and practice, humanities and aesthetic curriculum nature (Xia, 2008).

1.5.4 Time duration from March 2021----October 2021

1.6 Conceptual Framework

Independent Variable   Dependent Variables

| Problem-Based Learning | Music Teaching Scheme Design and Teaching Practice Learning Achievement |
| | Students' Satisfaction |
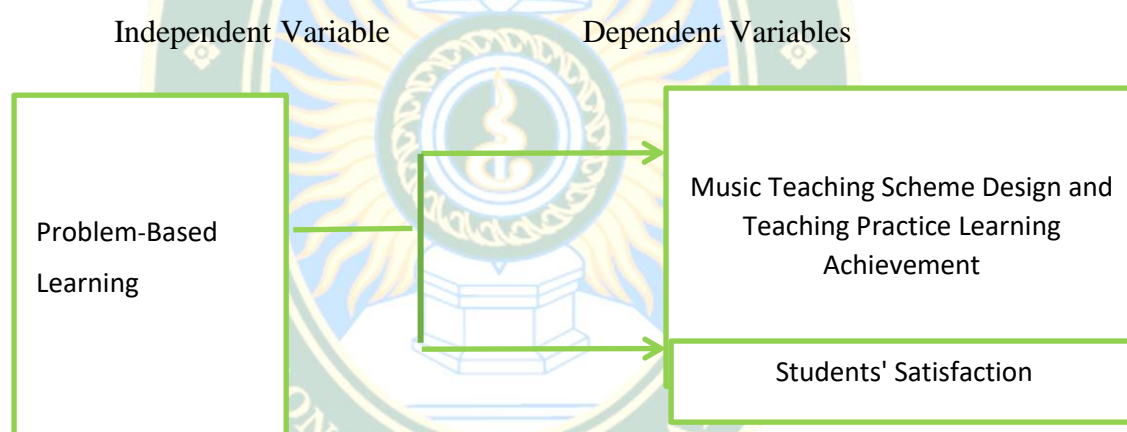
1.7 Operational Definition

1.7.1 Problem-Based Learning refers to the instructional method that gives the students the opportunity to think to solve problems and gain knowledge.

There were five steps:
1) Bringing out the question
2) Analyzing the problem
3) Solving the problem
4) Achievement presentation
5) Reflective evaluation

1.7.2 Learning Achievement refers to students' knowledge and performance ability in studying "Music Teaching Scheme Design". There will be the scoring criteria to evaluate the students' achievement.

1.7.3 The students' satisfaction refers to students' feeling and ideas. Music Teaching Scheme Design and Teaching Practice on students' satisfaction consisted of three components: teacher; instruction and assessment. The students' satisfaction questionnaire will be constructed by the researcher. The rating will be five scaleн :

excellent; very good; good; fair and poor. After the students' presentation in class, Mutual evaluation between groups and within groups will be carried out. Through this evaluation link, students could better identify their own advantages and disadvantages. Sum up experience and draw lessons, and enhance their ability to find, analyze and solve problems, to improve students' satisfaction.

1.8 Significance of this study

1.8.1 Theoretical Significance

Using Problem-Based Learning in Music Teaching Scheme Design and Teaching Practice focuses on students constructing their knowledge, understanding their thinking analysis and solving the problem process that helps students understand the concept clearly.

1.8.2 Practical Significance

Using Problem-Based Learning in Music Teaching Scheme Design and Teaching Practice focuses on student problem solving performance by using knowledge and problem solving skills that help students applied in various situations.

CHAPTER 2
LITERATURE REVIEW

Music Teaching Program Design and Teaching Practice is a professional course with normal attribute set up by Musicology Major. It has strong practicality. Problem-Based Learning (PBL) teaching method is a problem-oriented and student-centered teaching method. It is especially suitable for practical subjects. This chapter will cover the following topics: 1) Basic information on Music Teaching Scheme Design and Teaching Practice course. 2) Independent variable Problem-Based Learning (PBL) teaching method. 3) Dependent variables learning achievement and students' satisfaction. 4) Related research.

2.1 Basic information
2.1.1 Nature of the Curriculum
Music Teaching Scheme Design and Teaching Practice was a practical subject in the school music education system; it was a compulsory course for undergraduate musicology (teacher education) in colleges and universities; It based on the basic principles of music education and the practical analysis of music education phenomena. Optimizing music teaching practice provides theoretical and practical guidance for school music education and teaching; it had a highly unified curriculum nature of knowledge and skills, theory and practice, humanities and aesthetics (Xia, 2008).

2.1.2 Teaching Purposes
Through the study of this course, students could love the cause of music education, established a sense of responsibility in the work of music education in schools, be good teachers, and actively and creatively carried out music teaching.

In participating in classroom teaching activities, students' teaching practiced ability and teaching innovation consciousness were cultivated, and students' ability to read materials, find problems, solve problems and carry out music teaching research is cultivated.

To develop students' ability to independently carry out the teaching design and classroom teaching practice of music classes in primary and secondary schools under the guidance of theory.

2.1.3 Research Subjects
This study was conducted in the classroom of " Music Teaching Scheme Design and Teaching Practice", which is aimed for the third year students of music major university. After two years of study, the students in this stage have understood and mastered the piano foundation, vocal music foundation, instrumental music foundation, opera foundation, harmony, music analysis and other professional

courses, and have certain professional knowledge and accomplishment, which has laid a solid foundation for the next stage of study.

2.2 Independent Variable: Problem-Based Learning (PBL) Method

2.2.1 Principle, Theory of Problem-Based Learning (PBL) Method

2.2.1.1 Constructivist learning theory

Constructivist learning theory was put forward by the famous psychologist Piaget in the 1980s, the construction of socialist ethics advocated learning, learning knowledge not only from teachers to students of the one-way teaching, teachers also need to guide students thinking, in student organization activities and to promote the development of students' knowledge level. It attaches great importance to the students' active learning (Zhang, 2019).

Core content was the theory for teachers, teachers' teaching is not only to teach students the knowledge, they also need to build a relatively democratic teaching environment, students actively to solve problems, stimulate students' interest, so the teacher is not only a imparter of knowledge, and the teaching process of the designer, the organizer of teaching activities, students learning guide. For students, this theory needs to actively construct knowledge. When learning new knowledge, students need to form some explanation or reasoning for new problems from previous learning experience, which is not imaginary, but formed on the basis of original knowledge. The construction of new knowledge is also reflected in the process of group cooperative learning. As each person has different understanding of things, through clear division of labor and teamwork to solve problems, rich and comprehensive knowledge can be obtained.

2.2.1.2 Humanistic learning theory

In the 1950s and 1960s, humanistic learning theory began to develop gradually. This theory is a kind of learning theory which is conceived by applying Maslow and Rogers' related theories to practical learning. This theory holds that learners are people and have the ability to learn, but sometimes they need to be directed. Teachers are people who help learners learn smoothly, so the theory advocates changing the word "teachers" to "promoters of learnin". (David, 2011).

Humanistic learning theory emphasizes that teachers are no longer the center of non-directive teaching, and advocates individual-centered learning, which changes the one-sidedness of subject-centered in the past. Humanistic learning theory pays attention to the emotional factors of students' learning, and needs to create a clear environment and real problems in the process of teaching, which was conducive to stimulating students' active learning and cultivating their ability to explore independently, so that students' potential could be brought into full play.

2.2.1.3 Situational learning theory

Situational learning theory was an important research orientation put forward after behavioral learning theory and cognitive learning theory in the 1990s. Situational learning theory believes that knowledge was situational and people should acquire knowledge based on the situation.

Compared with verbal teaching, situational learning enables people to acquire a large amount of implicit knowledge imperceptibly in a real and natural situation, and then use these explicit knowledge and implicit knowledge naturally in the real environment (Chen，2016). Situational learning theory emphasizes the scene and the interaction of knowledge, knowledge to the problems presented in the form of scenarios, focuses on learning and using the combination of embodied in the students with the help of the specific role real play, the role of the simulation to do related work, interact with the students effectively, and ensure the value of learning knowledge. Therefore, it is necessary to take into account the real age, gender, knowledge reserve and other conditions of students when creating learning situations before implementing related problem teaching.

2.2.2 Definition of problem-based learning (PBL) method

Schmidt (1993) argued that: "Problem-Based Learning (PBL) teaching is a method of learning and constructing knowledge. Under the guidance of teachers, students deal with problems in groups."

Albanese (2003) believed: "The key to PBL the teaching model is to ask questions, and setting fascinating topics can attract students to actively participate in the discussion of the problem and got appropriate feedback and help from teachers to acquire new knowledge."

To sum up, Problem-Based Learning（PBL） teaching mode was a teaching mode that takes teachers as the leading, students as the main body, problems as the starting point of learning, and took cultivating students' lifelong learning ability and inquiry comprehensive ability as the teaching goal. Teachers used situational teaching to enable students to complete knowledge construction in the process of constantly asking questions and solving problems.

2.2.3 Teaching Process of Problem-Based Learning（PBL）Method Before class

Dued to the particularity of this course, it was necessary to formulate learning tasks for students to carry out independent learning. Before class preparation, teachers designed teaching tasks according to teaching objectives and teaching priorities and difficulties. In order to stimulate students' interest in learning, they sent videos through WeChat group to lead to learning problems. After the teacher released the learning task, the students personally or took the group for pre-class preview, and find problem solutions through finding information and other methods, to provide the necessary premise for practical learning in the class.

In-class

The class was divided into three parts: teacher guidance, group cooperative learning and exhibition competition. First of all, the teacher asked each group about the preview before class. According to the specific situation of students' preview before class, the teacher explained to the corresponding degree. Through this link, students could have a clearer understanding of the key and difficult points of this lesson, and promoted the mastery and understanding of the next learning link. Secondly, each group carried out group cooperative learning with problems to be solved according to the pre-class preview results and the teacher's understanding after the explanation. Cooperative learning group link was the students learning phase, according to the situation and tasks set by the teacher into the group cooperation study, the team should brainstorm and have active discussion, according to the plan for division of labor in the group, group in the process to communicate with each other, and around the problem to be solved are discussed, so as to solve the problem in the discussion. If there were problems that could not be solved within the group, you can communicate with the teacher. In this link, the teacher should pay attention to the learning situation of each group. The teacher could make flowing observation, instructed and explained the problems and doubted that the group needed to solve individually, and guide students to think and solve problems. In this way, hierarchical teaching and time-saving effect could be achieved. Finally, each group presented the learning results, and the teacher made an evaluation and summary. After the results are displayed, each groupl voted to choose the group with the best performance in this class. Each group would conduct mutual evaluation to select the student with the best performance in this class, so as to improve the sense of competition and cooperation among students.

After class

After class, the teacher sent the video and class evaluation displayed by the class to the WeChat group to interact with the students to jointly solve the problems encountered in the learning process. Online urge students to pass their homework to the WeChat group within the specified time, and point out the advantages and disadvantages to evaluate the homework feedback by students (Liu, 2010).
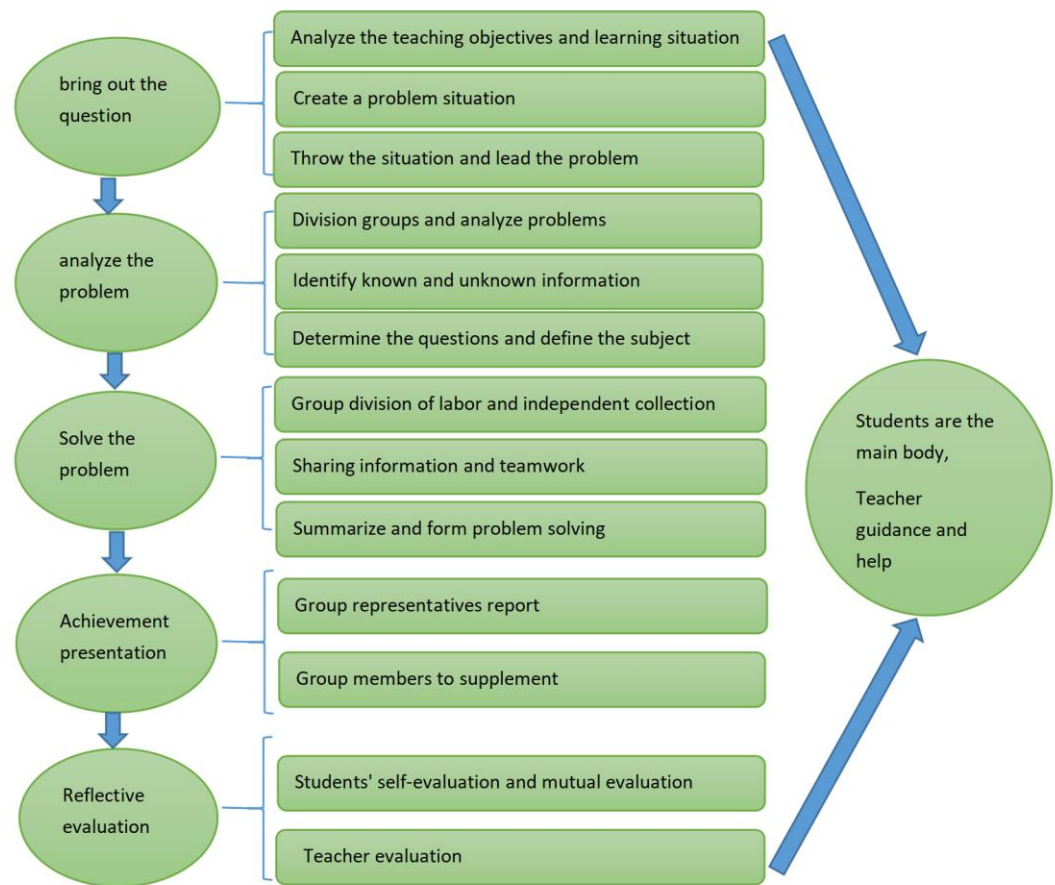
Figure 1 Flow chart of Problem-Based Learning (PBL) teaching method

      2.2.4 Role of Teacher and Students in Problem-Based Learning (PBL) Method

        2.2.4.1 Role of teachers

        Students were proactive learners in problem-based learning (PBL) method, and this did not mean ignoring the role of teachers. Could teachers used promotional teaching skills, which was decisive for the effect of problem-based learning (PBL) method (Gao, 2004). The role of teachers covers two main categories:

        1) Guidance:

        It includes providing feedback, asking questions and enlightening students on their reasoning process, encouraging them to critically evaluate information, and helping students coordinate and integrate basic knowledge and practical skills in problem discussion (Lu &Yang, 2010).

        2) Support for Interaction among Group Members:

        Encourage students to control the learning process and established good group membership. Teachers should guide students through all aspects of problem-based learning (PBL) method and monitor group activities to ensure that all students

participate in the activities, encourage students spoke out about their thinking process, and encourage them to comment on each other (Tang, 2010). Teachers should play a role in demonstration and coaching. Teachers demonstrate high-level thinking skills by asking questions that inspire students to think deeply. For example, teachers, as promoters, always asked, "Why?" "What did you mean?" "How did you know it's right?" Understood the problem widely and see if the understanding in the group is consistent to demonstrate critical thinking. Also demonstrate how to self-evaluate your reasoning and understanding skills.

Teachers generally do not directly express their views or provide relevant information to students, and try not to use their knowledge of this content to ask questions that can "lead" students to the correct answer. Instead, they often ask questions about planning, monitoring, controlling, and evaluating activities in the problem-solving process, rather than involving specific areas of knowledge, such as," what questions should we ask at this time?" "What else do you need to know?" "How can we figure this out?" "Does the group agree?" (Wang, 2007).

At the beginning of group activities, teachers need to play a more supportive role, and as the activities go on, will slowly retreat and give way to students' independent exploration. A good facilitator will not limit students' exploration of various possible unknown fields, but will carefully guide students to the key aspects of the problem space, thus making better use of the learning opportunities provided by the problem.

2.2.4.2 Role of Students

1) Students are the main body of learning, and the status of teachers and students is equal. Problem-based learning (PBL) method is a student-centered teaching method. In problem-based learning, students begin to learn from open questions, and teachers do not have the only available standard answers to these questions. Therefore, teachers and students stand in the same positions, students do not have to have certain teacher instructions and answers (Han, 2007).

2) Students Acquire Knowledge Actively and Construct Themselves

From the way of knowledge acquisition, students acquire and understand knowledge through inquiry, hands-on work, mutual discussion and self-reflection in the process of solving problems, not directly from teachers and textbooks. Moreover, the meaning and value of knowledge depends on the consistency between the knowledge they construct themselves, the effectiveness of problem-solving, not on the consistency with authoritative views (Hou, 2008). This meaned that the knowledge that students need is not mastered in teachers and textbooks, students' dependence on teachers was greatly reduced, teachers are no longer the only knowledge base, but the promoters of knowledge construction. The role sof the starting point and the helped of the students (Liu, 2008).

3) Students Had Autonomy and Motivation

In problem-based learning, students acquired knowledge mainly by themselves, which naturally made them feel that learning knowledge is their own business and responsible for their own learning. Therefore, they must exert their autonomy, initiative and originality, actively construct their own knowledge, constantly reflected on and thought critically about knowledge (Gao, 2004) . Otherwise, nothing would be achieved, even less effective in traditional teaching, because no one would directly inculcate them with the results of ready-made knowledge.

4) Student Group was Social

Students should not only gave play to their own subjectivity, but also gave full play to the social nature of the group, students as a learning community, common responsibility and responsibilities, here, the cooperation in the group had a substantive role, students no longer only paid attention to their communication with teachers and did not pay attention to the communication with classmates. Therefore, learning was no longer just their own own business, but everyone's business (Qi, 2004).

5) Students Had Ability to Learn Independently

Among problem-based learning (PBL) method, problem-solving activities throughout the learning process were the best way to promote students' continuous efforts. This was the driving force of autonomous learning.

2.2.5 Synthesizing of Problem-Based Learning (PBL) Method Innovation

Problem-based learning (PBL) method was an activity that promotes continuous learning behavior through a series of problems. It required learning activities to start with the discovery and presentation of problems, ran through the students' learning process and the integration of knowledge with a hierarchical, structured, sustainable and extensible problem system, and completed the effective transfer of learning and realizes the continuous construction of knowledge through the solution of problem system (Huang, 2020).

The teaching design of this study constructs the problem system by decomposing the teaching objectives. The teaching goal was decomposed into progressive and concrete sub-tasks according to the internal relationship of the teaching content, and then the teaching sub-tasks obtained by the decomposition of the teaching goals were transformed into the form of problems to the students, so as to construct the problem system. The problem-based learning of this study (PBL) method, on-line classroom face-to-face teaching activities, through the use of WeChat and other mobile phone app communication software, online pre-class and after-class interactive communication evaluation, through online and offline effective connection, students learned to find problems, analyzed problems, solved problems, sublimated problems, reasonable expansion, cultivated students' scientific thinking ability, make it easier for students to understand the important and difficult points in

the classroom, guide students to experience the process of concept construction and scientific inquiry, improved students' core literacy of teacher education.

2.2.6 Lesson Plan Writing

The teaching plan was a practical teaching document for the teachers in order to successfully and effectively to carry out teaching activities, according to the curriculum standards, the teaching syllabus and textbook requirements and the actual situation of the students, and arrange the teaching content, teaching steps and teaching methods. Teaching plan included teaching material analysis and student analysis, teaching purpose, important and difficult points, teaching preparation, teaching process and practice design. The syllabus of the Music Teaching Program Design and Teaching

Practice course is shown as follows:

Basic Course Information

Course Code: 18110131007

Course credits: 2 credits

Course class hours: 36 class hours

Course category: Professional required courses

Applicable major (direction): Musicology

Introduction to the Course

" Music Teaching Scheme Design and Teaching Practice" belonged to the school music.

Education discipline system with strong practicality discipline; It was a compulsory course for undergraduate musicology (teacher education). This subject was based on the basic principles of music education and the practical analysis of music education phenomenon, optimizing music teaching practice provided theoretical and practical guidance for school music education teaching, with knowledge and skills, theory and practiced, humanities and aesthetic highly unified nature of the course.

Course Objectives

Course objective 1: to understand and master the basic knowledge of the course, familiar with the characteristics of various teaching methods;

Objective 2: to cultivate students' ability to independently design and practice music teaching in primary and secondary schools;

Objective 3: to cultivate students' ability of reading materials, finding and solving problems, and their sense of teaching innovation;

1) Graduation Requirements for Course Support

Table 1 Course Objectives

Graduation Requirement Points	Course Objectives
Have preliminary teaching ability, according to the music curriculum standards, for the general law of physical and mental development and cognitive characteristics of music subjects, the use of music subject teaching knowledge and information technology and other curriculum resources for teaching design, classroom teaching and academic evaluation, through independent lesson preparation, class and correcting homework, complete the classroom teaching task teaching experience.	1. Understands and grasps the basic knowledge of the course, and is familiar with the characteristics of various teaching methods; 2. Cultivate students' ability to carry out the teaching design and classroom teaching practice of music courses in primary and secondary schools independently; 3. Cultivate students' ability to read materials, find problems, solve problems and their awareness of teaching innovation.

2.3 Dependent Variable: Music Teaching Scheme Design and Teaching Practice Learning Achievement (1)

2. 3. 1 Principle, Theory of Music Teaching Scheme Design and Teaching Practice Learning Achievement

Learning achievement was an important indicator reflecting the quality of education and youth development, so learning achievement has become one of the classic problems discussed by scholars at home and abroad. Yao & Tao (2004) believed that learning achievement was a comprehensive aspect of students' academic performance, comprehensive ability and overall quality in school. Wang (2009) believed that learning achievement was the result and comprehensive quality of university students' learning activities in school, which could directly reflect the quality of university education. To sum up, the connotation of learning achievement basically focuses on knowledge and ability. In this study, the design of music teaching scheme and teaching practice learning achievement were composed of homework scores, class performance scores and final examination scores, etc.

2. 3. 2 Definition of Music Teaching Scheme Design and Teaching Practice Learning Achievement

The definition of learning achievement presented a variety of characteristics. In the field of education, learning achievement generally refers to the knowledge, understanding, and skills obtained by students in the school through formal courses, teaching design and other specific education. An inductive analysis of American

research on learning achievement by York, Gibson and Rankin (2015) found that 54.8% of research on learning achievement used student achievement or GPA as a measure of student learning achievement. Scholars defined learning achievement from different perspectives in research based on different research purposes. The research object of this paper was students, and academic performance was the key index to measure their learning effect, Therefore, the narrow definition of learning achievement, that was, Music Teaching Scheme Design and Teaching Practice academic performance of third year university students majoring in Musicology of Zhoukou Normal University.

2.3.3 The Importance of Music Teaching Scheme Design and Teaching Practice Learning Achievement

Learning achievement was a standard to measure learning. For middle school students, it was also the premise of entering a good university. For university students, it was the stepping stone to enter the society. Achievement was an objective performance of your knowledge, and also one of the criteria for evaluating your students' own abilities. Although it did not represent all your abilities, it was one of the effective evaluation methods.

2.3.4 Components of Music Teaching Scheme Design and Teaching Practice Learning Achievement

Learning achievement was a form of quantitative evaluation, which can effectively evaluate students' mastery of textbook knowledge over a period and belonged to one of the important and objective evaluation standards in the learning process. Under China's school education system, schools generally conducted a centralized examination in the middle and final period respectively, and the examination results are expressed in the form of a centesimal system, that was, the medium and final results. The total evaluation results are generally calculated by 40% of the teachers on schedule and the final results of 60%. However, the comprehensive score of this course includes two parts: primary and secondary school music teaching program design and students' presentation. The final resulted of comprehensive score is calculated by 50% of primary and secondary school music teaching program design and 50% of students' presentation.

2.3.5 Develop/ construct the Music Teaching Scheme Design and Teaching Practice Learning Achievement

According to the requirements of musicology professional training program, Music Teaching Scheme Design and Teaching Practice in the fifth and sixth two semesters, is in the students' professional basic knowledge, focusing on class and micro class practical practice, through the classroom operation and diagnostic evaluation, in order to achieve students could pass the teaching qualification interview, smoothly through the country of primary and secondary school teachers recruitment interview.

2. 3. 6 Measurement and Evaluation of Music Teaching Scheme Design and Teaching Practice Learning Achievement

Learning achievement was the concrete performance of students' learning results after a period of learning. A number of methods to evaluate students' learning achievement were developed in the method research of measuring learning achievement, while in the application of teachers and some research related to learning achievements, most take students' academic performance as the standard for evaluating students' learning achievement.

This study measured learning achievement in a variety of forms such as primary and secondary school music teaching program design and students' presentation. The higher score means the better student's learning achievement.

2.4 Dependent Variable: Students' Satisfaction (2)

2.4.1 Principle, Theory of Students' Satisfaction

Satisfaction theory was originally applied to enterprises, called customer satisfaction theory, and it has been well applied and effective in for-profit and non-profit organizations in many countries and regions. The first time satisfaction theory was applied in the field of education was after 1990, when some expectations of prospective education satisfaction and students' evaluation of universities were published in some authoritative journals. Now the application of students' satisfaction theory in the field of education has been recognized by most people.

2.4.2 Definition of Students' Satisfaction

Satisfaction was a kind of psychological stated which refer to a person's subjective evaluation of the quality of a relationship. If you used numbers to measure this state of mind, this number was called satisfaction. The students' satisfaction of this study referred to the subjective psychological stated of the third-year students of musicology major at Zhoukou Normal University before and after the used of Problem-Based Learning (PBL) teaching method in the classroom of Music Teaching Scheme Design and Teaching Practice. It was the sense of pleasure after students' needs are met, and it is the relative relationship between students' expectation of the effect of Problem-Based Learning (PBL) teaching method and their actual feelings after the end of the course.

2.4.3 The Importance of Students' Satisfaction

Students' satisfaction is very important, specifically manifested in the following three aspects:

1) At the national level. The quality of national higher education is reflected in the degree to which the products and services provided by higher education meet the social and personal needs, so the degree of satisfying the social and personal needs is an important standard to test the quality of higher education. The students' satisfaction evaluation can provide a good basis for the competent education departments and the

public to evaluate the quality of higher education. Therefore, students' satisfaction was a very important and practical management tool, which was essential to improve the quality of higher education.

2) At the school level. Higher students' satisfaction could improve the student retention rate, which was conducive to higher learning institutions to establish their own brand, and improved their reputation in the public. Higher students' satisfaction could also improve student loyalty, students loyal to the school will recommend others to study, they would continue to consume the school when conditions permit, such as continued to study in the graduate school, study other majors. Students' loyalty to the school was also reflected in the possibility of their support to the school in the future. Students with high satisfaction would feed back their Alma mater in the future, which was why some high-quality research university graduates donated more significantly. Therefore, colleges and universities should improve the quality through the strategy of improving students' satisfaction, establish their own brands, attracted more consumers, and promote the virtuous circle of school development. (Tao & Hu, 2009)

3) At the course level. Students' satisfaction was a very important evaluation tool. The higher students' satisfaction meant the higher students' recognition of the curriculum, teachers and teaching methods. Taking the design of this research music teaching scheme and teaching practice course as an example, the level of students' satisfaction directly affects the success or failure of the application of Problem-Based Learning (PBL) teaching method in this course.

2.4.4 Components of Students' Satisfaction

Students' satisfaction was the embodiment of satisfaction in the field of learning. From the cognitive point of view, it could be seen as a subjective psychological state formed by comparing the expected effect of all the experiences provided by the school with the actual perceptible effect (both cognitive and emotional). It was the process of students' feeling of education and teaching effect in the process of learning Teaching quality and teaching environment were kinds of psychological responses to the degree of learning experience to meet their own needs. From the emotional point of view, students' satisfaction is their happy feeling or attitude towards learning activities. Students' happy feeling or positive attitude was "satisfaction", which can be used to explain the results of students' learning. (Jiang, Zhao, Li, Liang, & Huang, 2017)

The students' satisfaction of this study includes the students' satisfaction with the learning objectives, the learning contents, the learning methods and the learning environment of the Music Teaching Scheme Design and Teaching Practice course.

2.4.5 Development/Construct the Students' Satisfaction

Students' satisfaction arises from the beginning of the classroom study and the expectations of education before the learning experience. Experience was the students' starting to learn deep understanding and association, with the deepening of

cognition, students also compared the gap between the emotional experience and expectation value, namely in the level of satisfaction within the time, high satisfaction to promote students' deep understanding of things and association, and understanding of things, so repeated cycle, students' satisfaction accumulation, eventually in the process of students forming value judgment, presents the comprehensive value of satisfaction of each time point. Therefore, satisfaction is a process that contains multiple psychological components, from the outside, involving the body's perception, cognitive process, emotional response and other aspects. At the same time, students' satisfaction was also a series of continuous values changing over time. (Jiang, Zhao, Li, Liang, & Huang, 2017)

According to the generation process and psychological mechanism of students' satisfaction, it could be summarized as the psychological expectation stage of learning Music Teaching Scheme Design and Teaching Practice course, the activity experience stage of learning Music Teaching Scheme Design and Teaching Practice course, and the effect evaluation and value judgment stage of learning Music Teaching Scheme Design and Teaching Practice course.

1) Psychological Expected Stage of Music Teaching Scheme Design and Teaching Practice

As the main body of the course of learning Music Teaching Scheme Design and Teaching Practice, the psychological value determined through their own cognition is the psychological expectation of the learners. At this stage students did not really participate in the learning experiences, and the psychological expectations were influenced by various factors such as their own age, gender, learning style, previous learning experience, learning motivation, and learning needed.

2) The Activity Experience Stage of Learning Music Teaching Scheme Design and Teaching Practice Course

Experience begins with the stimulation of learning and forms in the process of learning. Through participating in the classroom activities of Music Teaching Scheme Design and Teaching Practice, students could obtain the information about environmental stimulation and learning activities, so as to form a real, specific and direct impression and feeling, which was the initial experience of students on learning. Then, through participating in the learning activities of Music Teaching Scheme Design and Teaching Practice course, learning needed and learning emotions were generated. In the process of completing learning tasks and challenges, the understanding and feeling of learning support services, teacher-student interaction, learning freedom and other aspects are formed.

3) Stage of Learning Music Teaching Scheme Design and Value Evaluation of Teaching Practice Course. The value judgment stage was the highest stage of students' satisfaction development, it generally occurs in the end of course learning, was the students' overall understanding of learning Music Teaching Scheme Design and Teaching Practice curriculum and psychological feedback, was also the students

achieving goals, learning efficiency and learning effect between the feeling and evaluation and students' psychological expectations. Satisfaction was a constantly changing value over time, with continuity. In the previous two stages, each time point had the corresponding students' satisfaction, and the satisfaction at this stage was the cumulative value of students' satisfaction with the time point. When the cumulative value was positive, the learners was satisfied, otherwise, when the cumulative value was negative, the learner is dissatisfied. The higher the cumulative value, the higher the satisfaction.

2.4.6 Measurement and Evaluation of Students' Satisfaction

The measurement and evaluation of students' satisfaction was the measure of the objective evaluation, and it is one of the methods of the final quality evaluation. The measurement and evaluation of students' satisfaction of Music Teaching Scheme Design and Teaching Practice courses includes teacher quality evaluation, teaching target evaluation, teaching design evaluation, teaching process evaluation, teaching method evaluation, teaching effect evaluation and teaching characteristics evaluation, etc. This study used questionnaires to measure and evaluated students' satisfaction. The higher the measurement and evaluation score indicates the higher the students' satisfaction, and the lower students' satisfaction is measured by a lower score.

2.5 Related Research

2.5.1 Case 1

1) Researcher name: Wang Zheng

2) Research title: Experimental Study on PBL Teaching Method in Basketball Public Option Course of Henan University.

3) Sample group: The control class was 25 and 25 in the experimental class.

4) Research methodology: Literature data method, interview method, questionnaire survey method, teaching experiment method, mathematical statistics method, and logical method.

5) Research finding

The results showed that: (1) Problem-Based Learning (PBL) teaching method is better than conventional basketball teaching method in improving students' interest in basketball learning. (2) The ability of communication, cooperation and innovation of students cultivated by Problem-Based Learning (PBL) teaching method is better than that of conventional basketball teaching method. (3) Problem-Based Learning (PBL) teaching method was more beneficial to improve students' ability of communication and cooperation as well as finding, analyzing and solving problems.

2.5.2 Case 2

1) Researcher name: Jin Yilin

2) Research title: Application on PBL in High School Biology Teaching Based on WeChat Platform.

3) Sample group: The experimental group was 49 and 47 in the control group.

4) Research methodology: Literature research method, questionnaire survey method, action research method, and interview method.

5) Research finding

The experimental results showed that: (1) Problem-Based Learning (PBL) teaching method stimulated students' interest in learning and promote their learning motivation. (2) PBL teaching method could improve students' learning mode and enhanced their autonomous learning ability. (3) Problem-Based Learning (PBL) teaching method improved students' ability to ask and solved problems. (4) Problem-Based Learning (PBL) teaching method enhanced students' ability to express their views correctly.

2.5.3 Case 3

1) Researcher name: Dai Di

2) Research title: Student Creativity Training Based on Geography PBL Teaching.

3) Sample group: 52 High School First year Students.

4) Research methodology: Literature research method, classroom observation method, and interview method.

5) Research finding

The results show that: (1) it was necessary to cultivate students' creativity through education. (2) Problem-Based Learning (PBL) teaching mode introduced into geography class to achieve the goal of cultivating students' creativity. (3) Through the analysis of the teaching results that Problem-Based Learning (PBL) teaching method was indeed a feasible way to cultivate students' creativity, but it was not perfect, which was worthy of teachers' understanding and attention. Middle school teachers cried more in the future teaching activities to make it more mature and effective.

2.5.4 Case 4

1) Researcher name: Weng Xiaoyan

2) Research title: Influence of PBL Teaching Model on Oral English Express Ability in High School Students.

3) Sample group: 32 experimental classes, 32 non-experimental classes.

4) Research methodology: Questionnaire, testing, and classroom observation.

5) Research finding

Experimental results showed that: (1) PBI teaching mode actively promotes the interest and confidence in spoken English expression of high school students. (2) The application of Problem-Based Learning (PBL) teaching mode in high school English teaching had no significant impact on the oral English performance of high school students, but it well improved students' ability of independent learning, cooperative learning, critical thinking, logical thinking, and theme display and interpretation in English.

2.5.5 Case 5

1) Researcher name: Zhang Xueling

2) Research title: Evaluation of Application of PBL Teaching in Clinical Nursing of Obstetrics and Gynecology.

3) Sample group: There were 33 in the experimental group and 33 in the control group.

4) Research methodology: Statistical methods, questionnaire survey methods, teaching experiment method, mathematical statistical method.

5) Research finding

The experimental results showed that: (1) the Problem-Based Learning (PBL) teaching method meets the clinical teaching needs of the nursing interns in the new era. (2) PBL pedagogy improves the learning attitude of nursing interns and improved their learning ability. (3) Problem-Based Learning (PBL) teaching method improved the overall nursing ability of nursing interns. (4) The Problem-Based Learning (PBL) teaching method improved the satisfaction of nursing interns with the learning process. (5) The PBL teaching method improves the recognition of the nursing interns' awareness of the clinical teaching environment. (6) The Problem-Based Learning (PBL) teaching method improved the recognition of the learning effect of nursing interns. (7) Clinical teaching teacher was satisfied with the teaching content, method and effected of Problem-Based Learning (PBL) teaching method.

2.5.6 Case 6

1) Researcher name: Guo Qixu

2) Research title: Experimental Study of PBL Teaching Method in Back-Jump Teaching.

3) Sample group: There were 36 in the experimental group and 36 in the control group.

4) Research methodology: Literature data method, questionnaire survey method, teaching experiment method, and mathematical statistics method.

5) Research finding

The experimental results showed that: (1) Problem-Based Learning (PBL) teaching method has particularly good teaching effect in the process of back high jump. (2) PBL teaching method in the process of back crossing high jump

teaching, the students' ability continued to improve in all aspects. (3) PBL students have a positive attitude towards PBL teaching methods.

2.5.7 Case 7

1) Researcher name: Xu Yuhong

2) Research title: Construction and Application of PBL Biology Experimental Teaching Model.

3) Sample group: 36 Students in Biotechnology Class Class 2007.

4) Research methodology: Questionnaire method and mathematical statistics method.

5) Research finding

The experimental results showed that: (1) the PBL biological experimental teaching mode is in line with the characteristics of university curriculum facilities and the learning characteristics of the research object, and had certain feasibility and practicability. (2) PBL problem selection should be consistent with PBL learners' individual needs, which is not only conducive to problem solving, but also met PBL learners' needs to the maximum extent; The difficulty of the problem should be appropriate, and it was able to cause students' cognitive buying and thinking collision.

2.5.8 Case 8

1) Researcher name: Zhang Longjin

2) Research title: The Design of Flash Teaching in Secondary Vocational School Based on PBL Teaching Mode.

3) Sample group: There are 119 students in two classes in grade one of senior high school.

4) Research methodology: Literature analysis methods, interview methods, action research methods, and classroom observation methods.

5) Research finding

The results of this study showed that: (1) PBL Project Teaching Method was suitable for Flash Animation Design and Production. (2) The PBL project teaching method reflected the students as the main body and improve the learning initiative.

(3) Introduced the materials in learning by combining the actual situation of the school to stimulate the students' interest in learning.

CHAPTER 3
RESEARCH METHODOLOGY

This chapter described the research design and methodology which are used in the conduction of the study. The aims of this study are the following two points: 1) To compare the Music Teaching Scheme Design and Teaching Practice learning achievement of the third year university students before and after using the Problem-Based Learning (PBL). 2) To assess the students' satisfaction on the Problem-Based Learning (PBL). The description of population and samples, experimental design, research instruments, data collection, and data analysis are brought to be presented.

3.1 Population and Samples

3.1.1 The population in this study was 198 students majoring in Musicology of undergraduate level at Zhoukou Normal University, China.

3.1.2 The sample of this study was 42 students majoring in Musicology of undergraduate level at Zhoukou Normal University.

Cluster Random Sampling was used in this study. According to different majors and student administrative classes, we divided 198 students into five classes, with the number of 42, 42, 41, 42 and 31 respectively. I randomly selected one class from these five classes, and there were 42 students in this class.

3.2 Experimental Design

This study used one group pre-test and post-test design as shown in the figure below

Experimental group	O_1	X	O_2

O1 was measurement of the Music Teaching Scheme Design and Teaching Practice learning achievement before Problem-Based Learning (PBL) teaching.

X was Problem-Based Learning (PBL) teaching method.

O2 was measurement of the Music Teaching Scheme Design and Teaching Practice learning achievement after using Problem-Based Learning (PBL) teaching.

O1 and O2 were of the same version.

3.3 Research Instruments

       3. 3. 1 Research instruments were the tools for conducting the research to collect data. The research instruments which were used in this study were:

           3.3.1.1 Instrument for experiment was Lesson plans of PBL.

           3.3.1.2 Instruments for collecting data.

           1) The instrument for measuring was the Music Teaching Scheme Design and Teaching Practice learning achievement test.

           2) Questionnaire for students' satisfaction.

       3.3.2 Construction and examining/assessing the quality of research instruments.

           1) This study taught 5 sessions using the PBL pedagogy. Once a week, 2 hours each time, a total of 10 hours. The table below is the researcher's planned teaching schedule for this experimental study.

Teaching order	Class hours	Content of courses	Teaching method
The first class	2	Master the features and types of musical explaining lessons.	Problem-Based Learning (PBL).
The second class	2	Master the content, processes, and requirements of the music explaining lessons.	Problem-Based Learning (PBL).
The third class	2	Analyze whether the teaching objectives of this case meet the requirements, and analyze whether the process design of this case meets the requirements.	Problem-Based Learning (PBL).
The fourth class	2	Analyze whether the demonstration of this case is accurate; whether the teaching process of this case is highlighted and whether the difficulties are solved.	Problem-Based Learning (PBL).
The fifth class	2	1. Master the basic theory of the music explaining lessons, and guide the explaining lessons practice with the theory. 2. Music explaining lessons teaching scheme design for operations and simulation exercises.	Problem-Based Learning (PBL).

       According to the teaching plan of this research, the following table used the teaching steps of the Lesson plan in the first teaching as a model, and specifically describes the application of PBL teaching method in the teaching of Music Teaching Scheme Design and Teaching Practice.

Table 2 The First Class Teaching Process

The First Class Teaching Process			
Teaching Link		Teacher and student activities	Teaching design intent
Bring out the question	Before class	The teacher analyzed the teaching objectives, key points and difficulties of this lesson, and decided to use the explaining lessons video clip at the Henan Province explaining lessons competition as the medium, and send this video to the students through the WeChat platform, eliciting the concept, characteristics, and types of explaining lessons and meaning. After the teacher releases the learning tasks, the students conduct pre-class previews and find solutions to problems through methods such as searching for materials on their own to provide the necessary prerequisites for learning in the classroom.	Stimulate students' interest in learning and lead to learning problems.
analyze the problem	In class	The teacher randomly divided 42 students in this class into 8 groups, including 6 groups with 5 people in each group and the remaining 2 groups with 6 people in each group. According to the explaining lessons video released before class, students analyze problems, determine known and unknown information, finally determine problems and clarify topics. The teacher asks each group about the preview before class to preliminarily understand the students' cognition of the concept, characteristics, types and significance of explaining lessons. Teachers explain the common problems to a corresponding extent.	Through this link, students can more clearly understand the difficulties of this lesson, and promote the grasp and understanding of the next learning link.
Solve the problem		According to the pre-class preview results and the teachers 'understanding, each group entered the group's cooperative learning link with the problems to be solved (the concept, characteristics, type and significance of explaining lessons).Each group divides itself according to the plan, independently collect, share data and pool wisdom.During this process,	In this link, teachers should pay attention to the learning situation of each group. Teachers can observe freely, guide and explain the problems and doubts

The First Class Teaching Process		
Teaching Link	Teacher and student activities	Teaching design intent
	the team members communicate with each other and discuss the problem (the concept, characteristics, type, and significance of explaining lessons), so as to solve the problem.If you have unsolved problems in the group, you can communicate with the teachers.	that need to be solved by the group alone, and guide students to think about problems and solve problems, so as to achieve the effect of hierarchical teaching and time saving.
Achieve-ment pre-sen-tation	Each group had a student representative to explain the explaining lessons concept, characteristics (say rationality, scientific research, instrumental, communication), type (discussion explaining lessons, demonstration explaining lessons, evaluation explaining lessons, inspection explaining lessons) and significance.After the representative completes the speech, the group members made a supplementary presentation.	Presentation
Refle-ctive evalu-ation	After each group's presentation, the teacher gave supplementary explanations to the students' omissions and problems, so that each student understood the concept, characteristics, types and significance of explaining lessons. Each group voted to select the group with the best performance in this class. Each group would evaluate the students in the group and select the student with the best performance in this class.	Improve the awareness of competition and cooperation spirit between students
after class	After class, teachers interact with students through the WeChat platform to jointly solved the problems that had not been fully understood in the classroom learning process.	

I sent the lesson plans reviewed by thesis advisors to three experts in this course group, all of whom are associate professors. I got three the lesson plan evaluation forms with full marks. The recovery rate was 100%. After a series of mathematical operations, I obtained the CVI of the evaluation criterion detailed rules

of the lesson plan. CVI of evaluation criterion detailed rules of Lesson Plan were all higher than 0.79. Therefore, the lesson plan can be used. See appendix for details.

2) The instrument for measuring is the Music Teaching Scheme Design and Teaching Practice learning achievement test.

Constructing the learning achievement test was proceeded as follows.

Step 1: Studying the construction of the learning achievement test and the relevant documents. Consideration was focused on purposes, types, and contents of the test. The construction of the test involved item analysis in order to clarify the item discrimination and item difficulty of the test, as well as the validity and reliability of the test.

Step 2: Analyzing the curriculum contents and the learning objectives by constructing the analysis table of curriculum regarding the coverage of objectives and content of the curriculum. The test items consisted of four types of cognitive domain: 1) knowledge, 2) comprehension, 3) application, and 4) analysis.

Step 3: Constructing the learning achievement test on " the Music Teaching Scheme Design and Teaching Practice". The learning achievement test consists of two parts, namely lesson plan design test and explaining lessons video test. Lesson plan design test has 5 evaluation criterion detailed rules, and each evaluation criterion detailed rule is 20 points. Explaining lessons video test has 5 evaluation criterion detailed rules, and each evaluation criterion detailed rule is 20 points.

Step 4: The draft test was presented to thesis advisors for their advice on the appropriateness, precision, accuracy, ambiguity and wording of the test. After that the draft test was revised according to the thesis advisors' suggestions. The test and the test evaluation form were offered to the three experts for the content validity check and suggestions such as the type of questions, accuracy of the test and wording. The quality of the test was considered from Index of Item Objective Congruence (IOC) obtained from the achievement test evaluation form.

Step 5: Sent the learning Achievement test and the test Evaluation form reviewed by Thesis Advisors to three experts in the course group, all of whom are associate professors. I got three of the Test Evaluation Forms with complete scores. The recovery rate is 100% . After a series of mathematical operations, I got IOC of evaluation criterion detailed rules of Lesson Plan Design test and Explaining Lessons video test. See appendix for details.

As coiled be seen from the appendix, IOC of evaluation criterion detailed rules of Lesson Plan Design test and Explaining Lessons Video test are all higher than 0.5. Therefore, all evaluation Criterion detailed rules are appropriate, and the Learning Achievement test scheme can be used for testing.

Step 6: Revising the test according to the experts' comments and suggestions.

Step7: Measuring the item difficulty (p) and item discriminability (r) including reliability by trying out the test to students who had learned these content.

Step 8: Analyzing each item of the test to find out the item difficulty (p) and item discriminability (r) including reliability.

The researchers used the learning achievement test to test the students in class to obtain a set of data. Then used this set of data to measure item difficulty (p=.24—.39) and item discriminability (r=.33—.64) of the learning achievement test.

"The Total scores of High score group" is the number of maximum values in each item multiplied by the maximum values. "The Total scores of the Low score group" was the number of minimum values in each item multiplied by the minimum values. $\sum H$ referred as "Total scores of High score group". $\sum T_H$ was the maximum value in each item multiplied by the number of students. $\sum L$ referred as "Total scores of Low score group". $\sum T_L$ was the minimum value in each item multiplied by the number of students.. See the appendix for details. .

As can be seen from the appendix, the difficulty (p) for each item of the learning achievement test is in the range of 0.20-0.80, and the discriminability (r) for each item was greater than 0.2. So the item difficulty (p) and item discriminability (r) of the learning Achievement test met the requirements.

When researchers measured Reliability on the Learning Achievement Test, the original data of item difficulty (P) and item discriminability (R) of the Learning Achievement test were still used.

I converted the score value for each item into 5 levels of the Likert scale. 1——4 Score= "1", 5——8 Score= "2", 9——12 Score= "3", 13——16 Score= "4", 17——20 Score= "5". The learning achievement test reliability was then measured using the Cronbach's Alpha Coefficient on the SPSS software. See appendix for details.

According to the appendix, Cronbach's Alpha Coefficient of the Reliability of the learning achievement test is 0.884, which was greater than 0.8. Therefore, the reliability of the learning achievement test meets the requirements.

To sum up, I tested the quality of learning Achievement test tool from four aspects of validity, reliability, Item difficulty and Item discriminability, and the results all met the requirements. Therefore, my Learning Achievement Test tool met the requirements.

3) Questionnaire for students' satisfaction

The purpose of using a questionnaire was to collect data regarding the students' opinion toward the instruction such as the content of curriculum, learning activities, and the instruction materials. The data from the questionnaire could be used to improve the curriculum, lesson plans, and instructional materials.

The following were the steps of constructing the questionnaires:

Step 1: Studying documents related to constructing questionnaires.

Step 2: Constructing a questionnaire. The questionnaire consisted of three sections: Section 1 recorded the students' personal information. Section 2 was the five-point scale Likert questionnaire ranging from very high, high, moderate, low, and

very low. This section of the questionnaire consisted of 16 questions or statements asking about students' opinions toward the instruction. The statements of the questionnaire in this section were adapted from the student opinion questionnaire developed by the Department of General Education, the Ministry of Education (2542: 45). Section 3 was open-ended questions asking students' opinions toward instruction in terms of the content of the curriculum, the leaning activity, the instructional materials, assessment and evaluation. Also space was provided for additional opinions or other suggestions.

Step 3: The draft questionnaire was presented to thesis advisors for their advice on the appropriateness, precision, accuracy, ambiguity and wording of the questionnaire. After that the draft questionnaire was revised according to the thesis advisors' suggestions. The evaluation form were offered to the three experts for the content validity check and suggestions. The quality of the questionnaire was considered from Index of Item Objective Congruence (IOC) obtained from the achievement test evaluation form.

Step 4: To send the student satisfaction questionnaire reviewed by thesis advisors to three experts in this course group, all of which are associate professors. I got three the students' satisfaction evaluation forms with full marks. The recovery rate is 100% . After a series of mathematical operations, I obtained the IOC of the evaluation criterion detailed rules of the student satisfaction questionnaire. See appendix for details.

As could be seen from the appendix, the IOC of evaluation criterion detailed rules of the student satisfaction questionnaire is above 0.5. So all evaluation criterion detailed rules s are appropriate, and the student satisfaction questionnaire scheme can be used for testing.

Step 5: Revising the questionnaire according to the experts' comments and suggestions.

Step 6: Analyzing the reliability of the questionnaire. The student satisfaction questionnaire had 16 items. Each item had 5 options. "1" = STRONGLY DISAGREE with the statement, "2" = DISAGREE with the statement, "3" = GENERAL - you neither agree or disagree with the statement, "4" = AGREE with the statement ,"5" = STRONGLY AGREE with the statement. Then Cronbach's Alpha Coefficient was used on SPSS software to measure the reliability of the student satisfaction questionnaire. See appendix for details.

It can be seen from the appendix that the Cronbach's Alpha Coefficient of the reliability of the student satisfaction questionnaire is 0.880, which is greater than 0.8. Therefore, the reliability of the student satisfaction questionnaire meets the requirements.

To sum up, I tested the quality of the student satisfaction questionnaire from two aspects of validity and reliability, and the results were all in line with the

requirements. So my student satisfaction questionnaire tool is in line with the requirements.

3.4 Data Collection

3.4.1 The procedures of data collection were as follows:

1) The students were given the pre-test for the Music Teaching Scheme Design and Teaching Practice learning achievement before teaching.

2) The teaching using PBL, teaching observed the pre-test of learning.

3) The students were given the post-test for the Music Teaching Scheme Design and Teaching Practice learning achievement.

4) The students were given satisfaction survey form.

3.5 Data analysis

3. 5. 1 In this study, data were analyzed by using the statistical program according to the research objectives.

1) Mean and standard deviation for the students' satisfaction data.

2) Mean and standard deviation for pre-test and post-test education outcome.

3) t-test dependent sample for comparing the difference of mean (X) of pre-test and post-test education outcome before and after using Problem-Based Learning (PBL) teaching.

CHAPTER 4
RESULT

This chapter presents the findings related to the objectives of the research. The objectives of this research were as follows: 1) To compare the Music Teaching Scheme Design and Teaching Practice learning achievement of the third-year university students before and after using Problem-Based Learning (PBL). 2) To assess the students' satisfaction on Problem-Based Learning (PBL). The findings of this research were analyzed through descriptive statistics and t-test by using a statistical package program to answer the progress of participants after its implementation. The findings were described as follows.

Table 3 Statistical symbols

Statistical symbols	Description
$\overline{X}$	The average score of sample
S.D.	The standard deviation of the difference scores
T	The test statistic (denoted t) for the paired t test.
P	The p-value corresponding to the given test statistic t with degrees of freedom df.

4.1 The results of comparing the Music Teaching Scheme Design and Teaching Practice learning achievement of the third-year university students before and after using Problem-Based Learning (PBL).

The result of comparing the different scores of the Music Teaching Scheme Design and Teaching Practice before and after learning through Problem-Based Learning (PBL). The table below shows descriptive statistics and t-test as analyzed by statistical package program. This table aimed to answer the research objective about whether using Problem-Based Learning (PBL) was able to enhance the Music Teaching Scheme Design and Teaching Practice learning achievement.

Table 4 The resulted of comparing the different scores of the Music Teaching
Scheme Design and Teaching Practice before and after learning through
Problem-Based Learning (PBL)

Group	N	Pre-test scores		Post-test scores		T	P
		$\overline{X}$	S.D.	$\overline{X}$	S.D.		
Experimental group	42	71.32	5.667	80.10	3.740	16.739	.000

As presented in Table 1, the mean scores of pre-test of students' Music
Teaching Scheme Design and Teaching Practice learning achievement were 71.32
(SD = 5.667) and post-test of students' Music Teaching Scheme Design and Teaching
Practice learning achievement was 80.10, (SD = 3.740).

Moreover, it aimed to examine the different scores of before-and-after using
Problem-Based Learning (PBL) to enhance the Music Teaching Scheme Design and
Teaching Practice learning achievement. The results of this table showed that after
learning through Problem-Based Learning (PBL) in the classroom, post-test scores of
students' Music Teaching Scheme Design and Teaching Practice learning achievement
were greater than pre-test scores at .05 level of statistical significance (tdf = .000, p <
.05). The average scores of the study developed increasingly higher than pre-test.

**4. 2 The resulted of assessing the students' satisfaction on Problem-Based
Learning (PBL).**

The resulted of comparing the different scores of students' satisfaction after
learning through Problem-Based Learning (PBL) with the criteria set at 70 percent.
The table below shows++++

+ Descriptive statistics and t-test as analyzed by statistical package program.
This table aimed to answer the research objective about whether using Problem-Based
Learning (PBL) was able to enhance students' satisfaction.

Table 5 The resulted of comparing the different scores of students' satisfaction after
learning through Problem-Based Learning (PBL) with the criteria set at 70
percent

Group	N	Full score	Criteria score	$\overline{X}$	S.D.	T	p
Experimental group	42	80	56	77.57	3.769	37.096	.000

As presented in Table 2, the mean scores of t students' satisfaction after
learning through Problem-Based Learning (PBL) were 77.57 from a possible full
marks of 80 and the standard deviation was 3.796 which was statistically higher than
the criterion of 70% at .05 level of statistical significance (t_{df} = .000, $p < .05$).

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CHAPTER 5
DISCUSSION AND RECOMMENDATION

This research aims were as follows: 1) To compare the Music Teaching Scheme Design and Teaching Practice learning achievement of the third-year university students before and after using Problem-Based Learning (PBL) . 2) To assess the students' satisfaction on Problem-Based Learning (PBL). The sample was 42 third-year musicology students at Zhoukou Normal University. The experimental design was one group pre-test and post-test design. The research instruments were Lesson plans of Problem-Based Learning (PBL). Collect pre-test and post-test scores through the Music Teaching Scheme Design and Teaching Practice learning achievement test. Student satisfaction after using the PBL pedagogy in the classroom was collected by questionnaire. Data analysis were as follows: 1) Mean and standard deviation for the students' satisfaction data. 2) Mean and standard deviation for pre-test and post-test education outcome.

5.1 Research conclusion

5.1.1 This study analyzed and compared the pre-test and post-test scores of the third-year students of Zhoukou Normal University who used the Problem-Based Learning (PBL) in the classroom. Finally, it showed that The Music Teaching Scheme Design and Teaching Practice learning achievement of students after using Problem-Based Learning (PBL) was higher than before the learning. PBL teaching method adopts problem-driven teaching, and students actively analyzed and solved problems. In this process, students could better acquired knowledge. Students' lesson plan design ability and teaching practice ability had been significantly improved.

5.1.2 This study assessed the students' satisfaction on Problem-Based Learning (PBL) by using SPSS software. The results show that students' satisfaction toward Problem-Based Learning (PBL) method was at the high level. In the classroom practice of PBL teaching method, the learning method of questioning group communication provides students with full opportunities to discuss and learn from each other. Students would integrate into learning faster, contribute to the improvement of students' enthusiasm and creativity, and won the welcome of students.

5.2 Discussion

5. 2. 1 PBL pedagogy improved the Music Teaching Scheme Design and Teaching Practice learning achievement for musicology students. It may be because of the following two aspects: On the one hand, the PBL teaching method was a

teaching method that enables students to obtain knowledge and problem-solving skills in the form of group, which changed the traditional teaching form of the teaching method and paid attention to the combination of learning and thinking. Students could search, analyzed and collected data to increase the time of long-term memory of theoretical knowledge (Zhang, 2013). On the other hand, because in the process of PBL teaching, based on group cooperation to solve problems, it encouraged students to activate the existing knowledge and promote the understanding of new information, and provide students with independent thinking, organization, analysis, expression ability exercise opportunity, was conducive to cultivate students' collective concept and team spirit, so that their comprehensive quality showed comprehensive improvement (Wang, 2020).

5.2.2 PBL pedagogy enhanced student satisfaction with PBL pedagogy. The reasons related to the following aspects: First, the PBL teaching method was conducive to improving the students' inner interest and making the learning process more educational and enjoyable. The process of group discussion of PBL pedagogy was the relational process of building solidarity and collaboration. Group students support and understood each other, promoted students 'more effective learning, and improve students' ability of cooperation. Second, the evaluation system of PBL teaching method ran through the whole process of students' learning. In the whole PBL teaching method practice, there were mutual evaluations among groups, mutual evaluation of students within the group, mutual evaluation between teachers and students, formative evaluation, process evaluation and so on. Therefore, the PBL pedagogical evaluation system was conducive to comprehensive students' learning effectiveness, so that students learned in evaluation, evaluated in learning, and gained the recognition of most students.

5.3 Recommendation

5.3.1 Recommendation for implication

1) Teachers needed to have a strong knowledge reserve of PBL teaching method, strengthen theoretical learning, enhanced teaching ability, and carefully completed the lesson preparation work, so that teachers could be confident during the teaching period.

2) In teaching, the PBL teaching method took students as the main body and teachers as the leading, and completed the teaching organization work. Although teachers act as guides, they could not leave students alone. Because teachers guided students to learn actively, they become the main body of learning (Wang, 2020).

3) In the practice of PBL teaching method, teachers should guide students to keep close to the learning content, always supervision and guidance, so that students did not deviate from the theme in the process of learning.

4）PBL teaching method effectively improved students' learning achievement in the actual classroom teaching process. Therefore, on the premise that conditions permitted, priority should be given to the use of PBL teaching method in the classroom.

5.3.2 Recommendation for further research

1) This PBL teaching method practice time is relatively short, and the number of lectures is limited. In order to better test the effect of PBL on cultivating students, excellent music teachers needed to use PBL teaching strategies in the classroom for a long time to conduct more effective empirical research in the future (Dai, 2017).

2) This research was constrained by my academic level and external resource conditions, so the exploration of PBL teaching method still had some shortcomings, which needed to be deeply explored and tried in the later stage.

3) A school did not represent all ordinary institutions of higher learning, so the PBL teaching method still needed to be verified in more ordinary institutions of higher learning, so that the results of the experiment can be more convincing.

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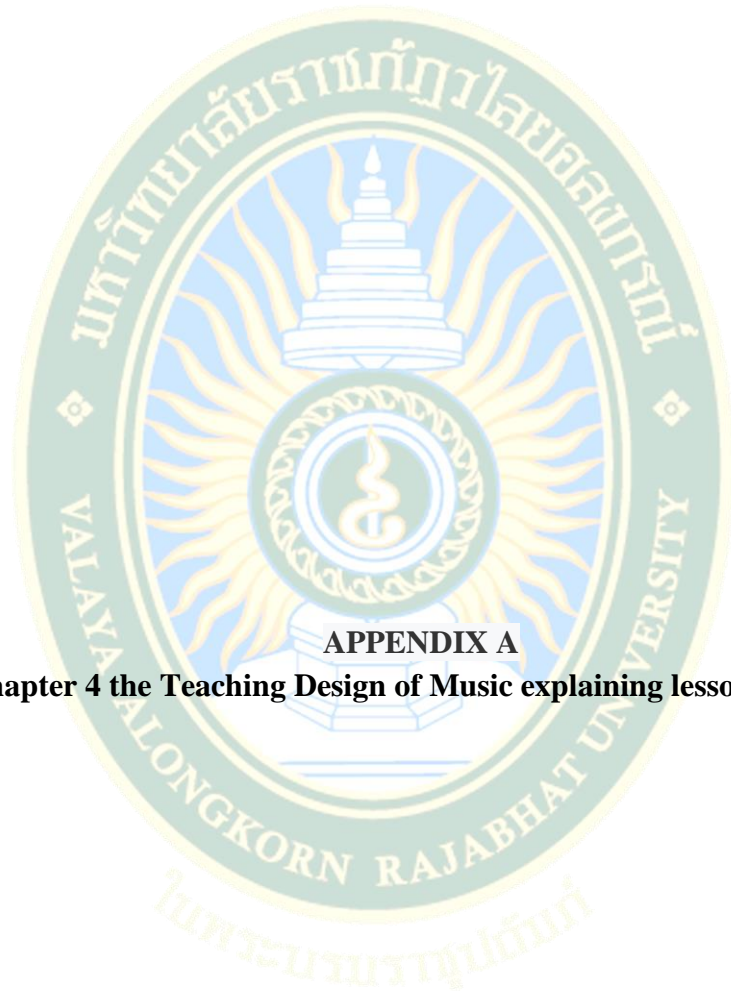
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APPENDICES

APPENDIX A
Chapter 4 the Teaching Design of Music explaining lessons Scheme

Design and Practice（The first class）

Basic Information Table		Teaching Name	Music explaining lessons Scheme Design and Practice		
		Instructor	Guo Feifei	Class hours	2 Class hours（100 minutes）
		Prelect Object	Third-year university student majoring in Musicology		
instructional objectives		Know-ledge and Skills Objective	Students understand and master the concept, characteristics, type and significance of explaining lessons, and can correctly use the above knowledge points to solve the corresponding practical problems.		
		Process and Method objectives	In the process of actively mastering the concept, characteristics, type and significance of explaining lessons, students gradually cultivate and develop their own ability to analyze and solve problems.		
		Emotional Attitude and Values Objectives	Through video introduction into the new class, in this course link, cultivate students 'communication and cooperation ability, stimulate students' interest in inquiry and innovative spirit, enhance students' self-confidence, and establish a correct view of learning.		
Key and Difficult Points in Teaching		Key point	Master the features and types of musical explaining lessons.		
		Difficult point	Apply the explaining lessons theory to practice.		
Teaching Environment		Hardware resources and other multimedia classroom, courseware and materials			
Instructional Strategies		teaching method	Teaching method, discussion method, comparison method, and situational experience method		
		learning method	Task Driven method		
Teaching Process					
Teaching Link		Teacher and student activities			Teaching design intent
Bring out the ques-tion	Before class	The teacher analyzed the teaching objectives, key points and difficulties of this lesson, and decided to use the explaining lessons video clip at the Henan Province explaining lessons competition as the medium, and send this			Stimulate students' interest in learning and lead to learning problems.

		video to the students through the WeChat platform, eliciting the concept, characteristics, and types of explaining lessons and meaning. After the teacher releases the learning tasks, the students conduct pre-class previews and find solutions to problems through methods such as searching for materials on their own to provide the necessary prerequisites for learning in the classroom.	
A̲anal̲y̲ze̲ the̲ pro-̲blem	In class	The teacher randomly divided 42 students in this class into 8 groups, including 6 groups with 5 people in each group and the remaining 2 groups with 6 people in each group. According to the explaining lessons video released before class, students analyze problems, determine known and unknown information, finally determine problems and clarify topics. The teacher asks each group about the preview before class to preliminarily understand the students' cognition of the concept, characteristics, types and significance of explaining lessons. Teachers explain the common problems to a corresponding extent.	Through this link, students can more clearly understand the difficulties of this lesson, and promote the grasp and understanding of the next learning link.
Solve the pro-blem		According to the pre-class preview results and the teachers 'understanding, each group entered the group's cooperative learning link with the problems to be solved (the concept, characteristics, type and significance of explaining lessons).Each group divides itself according to the plan, independently collect, share data and pool wisdom.During this process, the team members communicate with each other and discuss the problem (the concept, characteristics, type, and significance of explaining lessons), so as to solve the problem in.If you have unsolved problems in the group, you can communicate with the teachers.	In this link, teachers should pay attention to the learning situation of each group. Teachers can observe freely, guide and explain the problems and doubts that need to be solved by the group alone, and guide students to think about problems and solve

			problems, so as to achieve the effect of hierarchical teaching and time saving.
Achie-ve-ment pre-senta-tion		Each group has a student representative to explain the explaining lessons concept, characteristics (say rationality, scientific research, instrumental, communication), type (discussion explaining lessons, demonstration explaining lessons, evaluation explaining lessons, inspection explaining lessons) and significance.After the representative completes the speech, the group members can make a supplementary presentation.	presentation
Reflec-tive evalu-ation		After each group's presentation, the teacher will give supplementary explanations to the students' omissions and problems, so that each student can understand the concept, characteristics, types and significance of explaining lessons. Each group will vote to select the group with the best performance in this class. Each group will evaluate the students in the group and select the student with the best performance in this class.	Improve the awareness of competition and cooperation spirit between students
	after class	After class, teachers interact with students through the WeChat platform to jointly solve the problems that have not been fully understood in the classroom learning process.	

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APPENDIX B
Chapter 4 the Teaching Design of Music explaining lessons Scheme

Design and Practice（The second class）

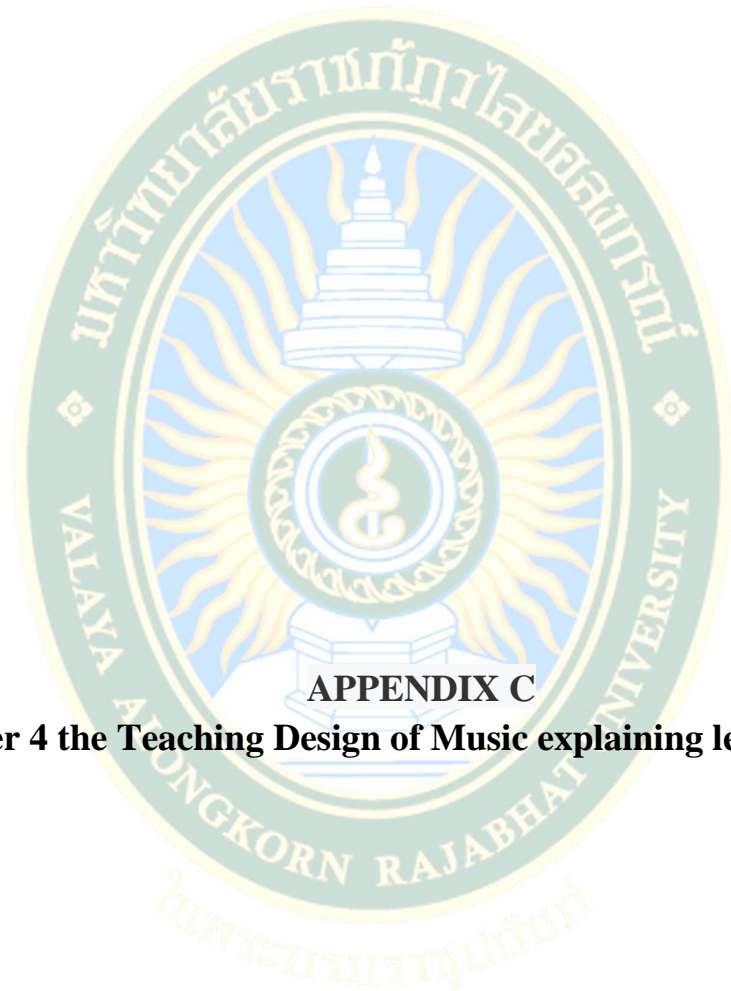| Basic Information Table	Teaching Name	Music explaining lessons Scheme Design and Practice		
	Instructor	Guo Feifei	Class hours	2 Class hours（100 minutes）
	Prelect Object	Third-year university student majoring in Musicology		
Instructional objectives	Knowledge and Skills Objective	Students understand and master the content, process and requirements of explaining lessons, and can correctly use the above knowledge points to solve the corresponding practical problems.		
	Process and Method objectives	In the process of actively mastering the content, process and requirements of explaining lessons, students gradually cultivate and develop their own ability to analyze and solve problems.		
	Emotional Attitude and Values Objectives	Through video introduction into the new class, in this course link, cultivate students 'communication and cooperation ability, stimulate students' interest in inquiry and innovative spirit, enhance students' self-confidence, and establish a correct view of learning.		
Key and Difficult Points in Teaching	Key point	Master the content, processes, and requirements of the music explaining lessons.		
	Difficult point	Apply the explaining lessons theory to practice.		
Teaching Environment	Hardware resources and other multimedia classroom, courseware and materials			
Instructional Strategies	teaching method	Teaching method, discussion method, comparison method, and situational experience method		
	learning method	Task Driven method		

Teaching Process			
Teaching Link		Teacher and student activities	Teaching design intent
Bring out the question	Before class	The teacher analyzed the teaching objectives and key points and difficulties of this lesson, and decided to use the explaining lessons video clip at the Henan Province explaining lessons competition as the medium, and send this video to the students through the WeChat platform, eliciting the content, process and requirements of the explaining lessons and other issues. After the teacher releases the learning tasks, the students conduct pre-class previews and find solutions to problems through methods such as searching for materials on their own to provide the necessary prerequisites for learning in the classroom.	Stimulate students' interest in learning and lead to learning problems.
Analyze the problem	In class	The teacher randomly divided 42 students in this class into 8 groups, including 6 groups with 5 people in each group and the remaining 2 groups with 6 people in each group. According to the explaining lessons video released before class, students analyze problems, determine known and unknown information, finally determine problems and clarify topics. The teacher asks each group about the preview before class to preliminarily understand the students' cognition of the content, process and requirements of explaining lessons. Teachers explain the common problems to a corresponding extent.	Through this link, students can more clearly understand the difficulties of this lesson, and promote the grasp and understanding of the next learning link.
Solve the problem		According to the preview results before class and the understanding after the teacher's explanation, each group enters	In this link, teachers should pay attention to

		the group cooperative learning link with the problems to be solved (the content, process and requirements of explaining lessons). Each group shall divide labor according to the plan, independently collect and share data and brainstorm. During this process, the team members communicate with each other and discuss the problems (contents, processes and requirements of explaining reasons), so as to solve the problems in the discussion. If there are problems that cannot be solved in the group, you can communicate with the teacher.	the learning situation of each group. Teachers can observe freely, guide and explain the problems and doubts that need to be solved by the group alone, and guide students to think about problems and solve problems, so as to achieve the effect of hierarchical teaching and time saving.
Achievement presentation		Each group by a representative of the students, to explain the explaining lessons content (textbook, teaching situation, learning, teaching method, process, blackboard writing), process (explaining lessons preparation, implementation, evaluation and reflection) and requirements.After the representative completes the speech, the group members can make a supplementary presentation.	Presentation
Reflective evaluation		After the display of each group, the teacher will further explain the places and problems missed by the students, so that each student can understand the content, process and requirements of the explaining lessons.Each group selects the best group in this class in each group in the form of voting, and each group selects the best student in this class group.	Improve the awareness of competition and cooperation spirit between students

	after class	After class, teachers interact with students through the WeChat platform to jointly solve the problems that have not been fully understood in the classroom learning process.	

APPENDIX C
Chapter 4 the Teaching Design of Music explaining lessons Scheme

Design and Practice（The third class）

Basic Information Table	Teaching Name	Music explaining lessons Scheme Design and Practice		
	Instructor	Guo Feifei	Class hours	2 Class hours（100 minutes）
	Prelect Object	Third-year university student majoring in Musicology		
Instructional objectives	Knowledge and Skills Objective	Based on the theoretical knowledge of explaining lessons, students can correctly use the corresponding knowledge points for explaining lessons case analysis.		
	Process and Method objectives	Based on the theoretical knowledge of explaining lessons, students can correctly use the corresponding knowledge points for explaining lessons case analysis.		
	Emotional Attitude and Values Objectives	Through explaining lessons case analysis, students stimulate students 'interest and innovative spirit, cultivate students' ability to find, analyze and solve problems, improve students 'team cooperation ability, enhance students' self-confidence, and establish a correct view of learning.		
Key and Difficult Points in Teaching	Key point	Analyze whether the teaching objectives of this case meet the requirements, and analyze whether the process design of this case meets the requirements.		
	Difficult point	Apply the explaining lessons case analysis to practice.		
Teaching Environment	Hardware resources and other multimedia classroom, courseware and materials			
Instructional Strategies	teaching method	Teaching method, discussion method, comparison method, and situational experience method		
	learning method	Task Driven method		
Teaching Process				
Teaching Link	Teacher and student activities		Teaching design intent	

Bring out the question	Before class	The teacher analyzed the teaching objectives and key points and difficulties of this lesson, and decided to use the explaining lessons manuscript of "Longing for Spring" as the material, and send the manuscript to the students through the WeChat platform, and ask the students to use the knowledge they have learned to analyze the explaining lessons manuscript. After the teacher releases the learning tasks, the students conduct pre-class previews and find solutions to problems through methods such as searching for materials on their own to provide the necessary prerequisites for learning in the classroom.	Stimulate students' interest in learning and lead to learning problems.
Analyze the problem	In class	The teacher randomly divides the 42 students in the class into 8 groups, of which there are 6 groups with 5 people in each group, and the remaining 2 groups with 6 people in each group. According to the explaining lessons released before class, students analyze the problem, determine the known and unknown information, finally determine the problem, and clarify the theme. The teacher asked each group about their pre-class preparations to get a preliminary understanding of the students' awareness of the analysis of the draft of "Longing for Spring" explaining lessons. Teachers explain the common problems to a corresponding level.	Through this link, students can more clearly understand the difficulties of this lesson, and promote the grasp and understanding of the next learning link.
Solve the problem		According to the preview results before class and the understanding after the teacher's explanation, each group enters the group cooperative learning link with the problems to be solved (case analysis is carried out from six aspects: textbook analysis, learning situation analysis,	In this link, teachers should pay attention to the learning situation of each group. Teachers can observe

		teaching objective analysis, determination of teaching key and difficult points, application and theoretical basis of teaching method, and whether the process design meets the requirements). Each group shall divide labor according to the plan, independently collect and share data and brainstorm. In this process, team members communicate with each other and discuss problems, so as to solve problems in the discussion. If there are problems that cannot be solved in the group, you can communicate with the teacher.	freely, guide and explain the problems and doubts that need to be solved by the group alone, and guide students to think about problems and solve problems, so as to achieve the effect of hierarchical teaching and time saving.
Achievement presentation		Each group was presented by a representative of the students for case analysis from six aspects. After the representative completes the speech, the group members can make a supplementary presentation.	Presentation
Reflective evaluation		After the display of each group, the teacher will further explain the missing places and problems of the students.Each group selects the best group in this class in each group in the form of voting, and each group selects the best student in this class group.	Improve the awareness of competition and cooperation spirit between students
	after class	After class, teachers interact with students through the WeChat platform to jointly solve the problems that have not been fully understood in the classroom learning process.	

APPENDIX D
Chapter 4 the Teaching Design of Music explaining lessons Scheme

Design and Practice（The fourth class）

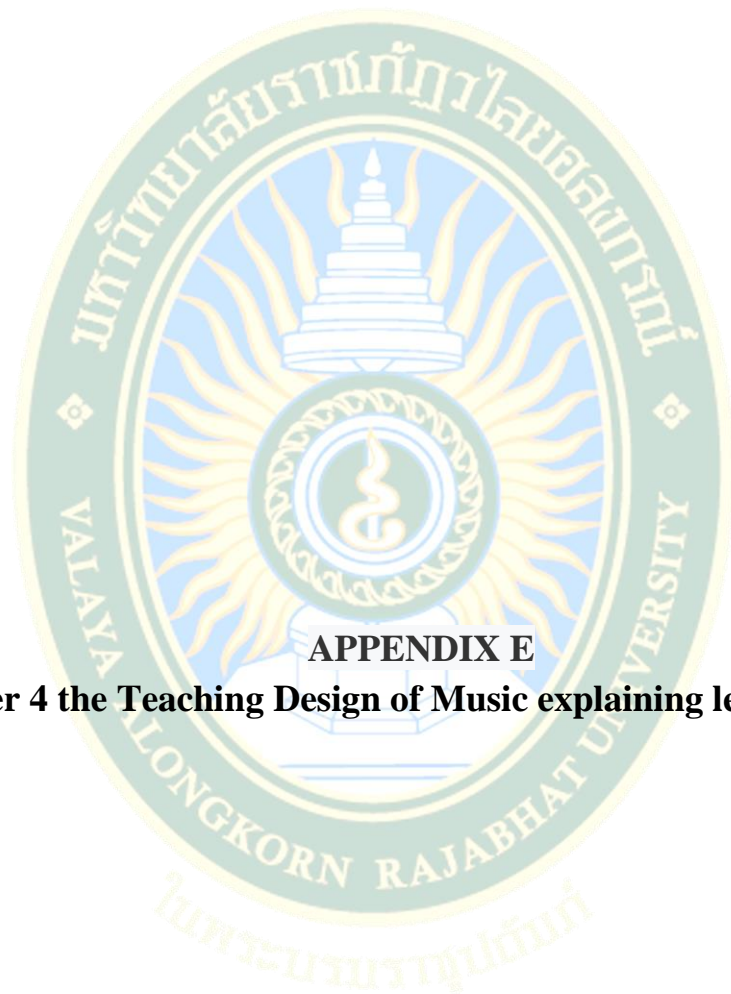| Basic Information Table	Teaching Name	Music explaining lessons Scheme Design and Practice		
	Instructor	Guo Feifei	Class hours	2 Class hours (100 minutes）
	Prelect Object	Third-year university student majoring in Musicology		
Instructional objectives	Knowledge and Skills Objective	Based on the theoretical knowledge of explaining lessons, students can correctly use the corresponding knowledge points for explaining lessons case analysis.		
	Process and Method objectives	Based on the theoretical knowledge of explaining lessons, students can correctly use the corresponding knowledge points for explaining lessons case analysis.		
	Emotional Attitude and Values Objectives	Through explaining lessons case analysis, students stimulate students 'interest and innovative spirit, cultivate students' ability to find, analyze and solve problems, improve students 'team cooperation ability, enhance students' self-confidence, and establish a correct view of learning.		
Key and Difficult Points in Teaching	Key point	Analyze whether the demonstration of this case is accurate; whether the teaching process of this case is highlighted and whether the difficulties are solved.		
	Difficult point	Apply the explaining lessons case analysis to practice		
Teaching Environment	Hardware resources and other multimedia classroom, courseware and materials			
Instructional Strategies	teaching method	Teaching method, discussion method, comparison method, and situational experience method		
	learning method	Task Driven method		

Teaching Process			
Teaching Link		Teacher and student activities	Teaching design intent
Bring out the question	Before class	The teacher analyzed the teaching objectives, key points and difficulties of this lesson, and decided to use the live video "Guerrilla Song" of the Henan Province Explaining Lessons Contest in 2011 as the medium, and send the video to the students through the WeChat platform, and ask the students to use the knowledge they have learned to analyze this explaining lessons video. After the teacher releases the learning tasks, the students conduct pre-class previews and find solutions to problems through methods such as searching for materials on their own to provide the necessary prerequisites for learning in the classroom.	Stimulate students' interest in learning and lead to learning problems.
Analyze the problem	In class	The teacher randomly divides the 42 students in the class into 8 groups, of which there are 6 groups with 5 people in each group, and the remaining 2 groups with 6 people in each group. Students analyze the problem according to the explaining lessons video released before class, determine the known and unknown information, and finally determine the problem and clarify the theme. The teacher asked about the pre-class preparation of each group to get a preliminary understanding of the students' awareness of the video analysis of "Guerilla Songs" explaining lessons. Teachers explain the common problems to a corresponding level.	Through this link, students can more clearly understand the difficulties of this lesson, and promote the grasp and understanding of the next learning link.
Solve the problem		According to the preview results before class and the understanding after the teacher's explanation, each group enters	In this link, teachers should pay attention to

		the group cooperative learning link with the problems to be solved (case analysis is conducted from seven aspects. First, what is your impression of the explaining lessons? Second, what is the difference between the content of explaining lessons and our requirements? Third, say the evaluation of teaching objectives and put forward suggestions for improvement. Fourth, whether the key points and difficulties in the teaching process are highlighted and solved. Fifth, whether the teacher's presentation is correct. Sixth, whether the process design meets the requirements. Seventh, whether the blackboard writing design is reasonable). Each group shall divide the work according to the plan, independently collect and share data and brainstorm. In this process, members of the group shall communicate with each other and discuss problems, so as to solve problems in the discussion. If there are problems that cannot be solved in the group, they can communicate with teachers.	the learning situation of each group. Teachers can observe freely, guide and explain the problems and doubts that need to be solved by the group alone, and guide students to think about problems and solve problems, so as to achieve the effect of hierarchical teaching and time saving.
Achievement presentation		Each group was presented by a representative of the students for case analysis from seven aspects. After the representative completes the speech, the group members can make a supplementary presentation.	Presentation
Reflective evaluation		After the display of each group, the teacher will further explain the missing places and problems of the students.Each group selects the best group in this class in each group in the form of voting, and each group selects the best student in this class group.	Improve the awareness of competition and cooperation spirit between students
	after class	After class, teachers interact with students through the WeChat platform to	

		jointly solve the problems that have not been fully understood in the classroom learning process.	

APPENDIX E
Chapter 4 the Teaching Design of Music explaining lessons Scheme

Design and Practice（The fifth class）

Basic Information Table	Teaching Name	Music explaining lessons Scheme Design and Practice		
	Instructor	Guo Feifei	Class hours	2 Class hours （100 minutes）
	Prelect Object	Third-year university student majoring in Musicology		
Instructional objectives	Knowledge and Skills Objective	Based on lecture theoretical knowledge, students have the ability to design an independent music speaking lesson teaching program.		
	Process and Method objectives	Using theory guidance practice, students will be able to complete the design of the music lecture teaching program in small groups, and carry out on-site explaining lessons, in the classroom to improve explaining lessons ability in simulation practice.		
	Emotional Attitude and Values Objectives	Through the design of learning teaching scheme and classroom simulation explaining lessons practice, we can stimulate students 'interest in inquiry and innovation spirit, cultivate students' ability to find, analyze and solve problems, improve students 'team cooperation ability, enhance students' self-confidence, and establish a correct view of learning.		
Key and Difficult Points in Teaching	Key point	Master the basic theory of the music explaining lessons, and guide the explaining lessons practice with the theory.		
	Difficult point	Music explaining lessons teaching scheme design for operations and simulation exercises.		
Teaching Environment	Multimedia classrooms and other hardware resources	Multimedia classrooms and other hardware resources		
Instructional Strategies	teaching method	Teaching method, comparison method, situational experience method		
	learning method	Task Driven method		

Teaching Process			
Teaching Link		Teacher and student activities	Teaching design intent
Bring out the question	Before class	The teacher analyzes the teaching objectives, key points and difficulties of this class, and sends the three songs "I will be you when I grow up", "Singing the Motherland" and "Yao Dance" to the students through the WeChat platform, and asks the students to use the knowledge they have learned Choose one of these three songs for the design of explaining lessons program. After the teacher releases the learning tasks, the students conduct pre-class previews and find solutions to problems through methods such as searching for materials on their own to provide the necessary prerequisites for learning in the classroom.	Stimulate students' interest in learning and lead to learning problems.
Analyze the problem	In class	The teacher randomly divides the 42 students in the class into 8 groups, of which there are 6 groups with 5 people in each group, and the remaining 2 groups with 6 people in each group. According to the three songs released before class, the students analyze the problem, determine the known and unknown information, and finally determine the problem and clarify the theme according to the teacher's requirements. The teacher asked about the pre-class preparation of each group to get a preliminary understanding of the students' awareness of the design of explaining lessons. Teachers explain the common problems to a corresponding level.	Through this link, students can more clearly understand the difficulties of this lesson, and promote the grasp and understanding of the next learning link.

		According to the preview results before	
Solve the problem	In class	class and the understanding after the teacher's explanation, each group enters the group cooperative learning link with the problems to be solved (there are seven aspects in the scheme design of explaining lessons. The first is to select topics and study teaching materials. The second is to be familiar with the contents of explaining lessons and arrange the process. The third is to know how to divide the time and content layout. The fourth is to organize the language and pay attention to the rational use of explaining lessons language and teaching language. The fifth is to reflect the characteristics of disciplines as much as possible in the design scheme. The sixth is to pay attention to teaching The objectives, key points, difficulties and activities in the process are consistent. Seventh, pay attention to optimizing the scheme design and be good at revision). Each group shall divide the work according to the plan, independently collect and share data and brainstorm. In this process, members of the group shall communicate with each other and discuss problems, so as to solve problems in the discussion. If there are problems that cannot be solved in the group, they can communicate with teachers.	In this link, teachers should pay attention to the learning situation of each group. Teachers can observe freely, guide and explain the problems and doubts that need to be solved by the group alone, and guide students to think about problems and solve problems, so as to achieve the effect of hierarchical teaching and time saving.
Achievement presentation		Each group is presented by a student representative.After the representative completes the speech, the group members can make a supplementary presentation.	Presentation
Reflective evaluation		After the display of each group, the teacher will further explain the missing places and problems of the students.Each	Improve the awareness of competition and

		group selects the best group in this class in each group in the form of voting, and each group selects the best student in this class group.	cooperation spirit between students

APPENDIX F
Students' Satisfaction

Instructions: I am currently writing an experimental research graduation thesis using PBL teaching method in the Music Teaching Scheme Design and Teaching Practice class. The full name of PBL is "Problem-Based Learning". According to the purpose and content of the research, we will ask you about the specific situation in the form of a questionnaire. The anonymous form of this questionnaire will not have any adverse effects on you. There are no right or wrong answers. Please choose the number according to your real thoughts and actual situation. Your true and objective answers will play a vital role in this research. I sincerely thank you for your great support.

Mark:
E = STRONGLY DISAGREE with the statement
D = DISAGREE with the statement
C = GENERAL - you neither agree or disagree with the statement
B = AGREE with the statement
A = STRONGLY AGREE with the statement

Students' Satisfaction	E	D	C	B	A
1. You are interested in this course.	1○	2○	3○	4○	5○
2. You will work hard to achieve your learning goals.	1○	2○	3○	4○	5○
3. The teaching method used in this course was helpful.	1○	2○	3○	4○	5○
4. Working on the problem helped me to understand the course materials.	1○	2○	3○	4○	5○
5. You think this course will help you in teaching your students.	1○	2○	3○	4○	5○
6. Time alloted to this course is suitable for you studying.	1○	2○	3○	4○	5○
7. The teaching materials used in this course were motivating you to learn.	1○	2○	3○	4○	5○
8. You are confident that you are mastering the content of the course activity that instructor presented to you.	1○	2○	3○	4○	5○
9. The instructor used helpful resources to teach the course.	1○	2○	3○	4○	5○
10. You know how to get help when you are not understand the concepts in this course.	1○	2○	3○	4○	5○
11. You have confident that you are developing the skills and obtaining the required knowledge from the teaching steps to perform necessary tasks in practice peer teaching.	1○	2○	3○	4○	5○
12. You have been getting the benefit for your teaching career from learning through A PBL approach in this course.	1○	2○	3○	4○	5○

13. You have the opportunity to work and share ideas in small group tasks.	1◯	2◯	3◯	4◯	5◯
14. You get along with classmates when instructor use PBL approach in teaching Music class.	1◯	2◯	3◯	4◯	5◯
15. You can actively reflect on the learning process, and summarize the learning gains and losses.	1◯	2◯	3◯	4◯	5◯
16. Through the study of this course, you are confident to get better results in the exam.	1◯	2◯	3◯	4◯	5◯

APPENDIX G
Achievement evaluation: percentage system

Learning achievement = Primary and Secondary School Music Teaching Program Design 50% + Student presentation video 50%.

Final examination：

1. Choose a lesson from the reference materials provided by the teacher, either singing or appreciating. Choose a more familiar content to independently complete a lesson plan design.

2. Based on your own explaining lessons program, hand in an explaining lessons video of no less than 10 minutes.

The scoring standard of lesson plan:

1. The structure of lesson plan is complete. (20 point)

2. The good of lesson plan is clear. (20 point)

3. The content of lesson plan is scientific and idea logical. (20 point)

4. The lesson plan design has interactive link. (20 point)

5. The lesson plan can accurately grasp the depth and breadth of teaching materials. (20 point)

The scoring standard of explaining lessons video:

1. Using Mandarin language with correct usage, appropriate vocabulary and grammar, understandable (rhythm, intonation, accent), spoken loud enough to hear clearly. (20 points)

2. Explaining the lesson in an appropriate way with theory, curriculum, and time spend. (20 points)

3. Teaching the lesson naturally with enthusiasm and innovation. (20 points)

4. Good explanation, demonstration, concisely appropriate and effective. (20 points)

5. The activities in teaching music are appropriate and aligned with teaching standards for middle school students. (20 points)
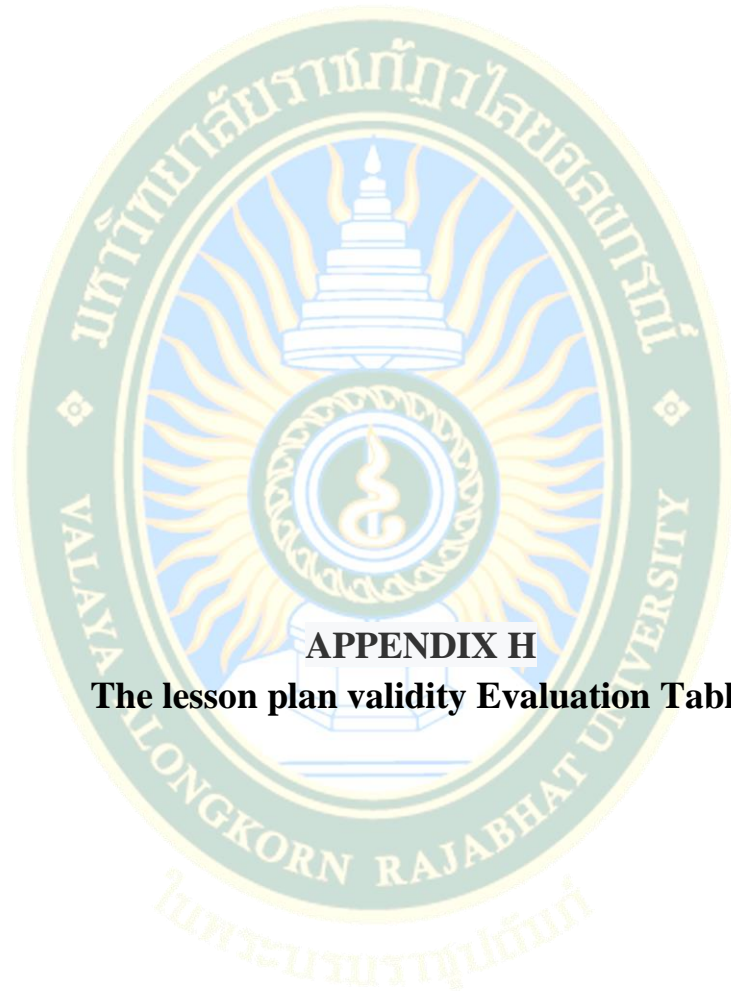
APPENDIX H
The lesson plan validity Evaluation Table

The lesson plan validity Evaluation Table

Item No.	Expert 1	Expert 2	Expert 3	Number in agreement	Item CVI	Sum up
1	5	5	5	3	3/3=1	Can be used
2	5	5	5	3	3/3=1	Can be used
3	5	5	5	3	3/3=1	Can be used
4	5	5	5	3	3/3=1	Can be used
5	5	5	5	3	3/3=1	Can be used
6	4	5	5	3	3/3=1	Can be used
7	5	4	5	2	3/3=1	Can be used
8	5	5	5	3	3/3=1	Can be used
9	5	5	5	2	3/3=1	Can be used
10	5	5	4	3	3/3=1	Can be used
11	5	5	5	3	3/3=1	Can be used
12	5	5	5	3	3/3=1	Can be used
13	5	5	5	3	3/3=1	Can be used
14	5	5	5	3	3/3=1	Can be used
15	5	5	5	3	3/3=1	Can be used

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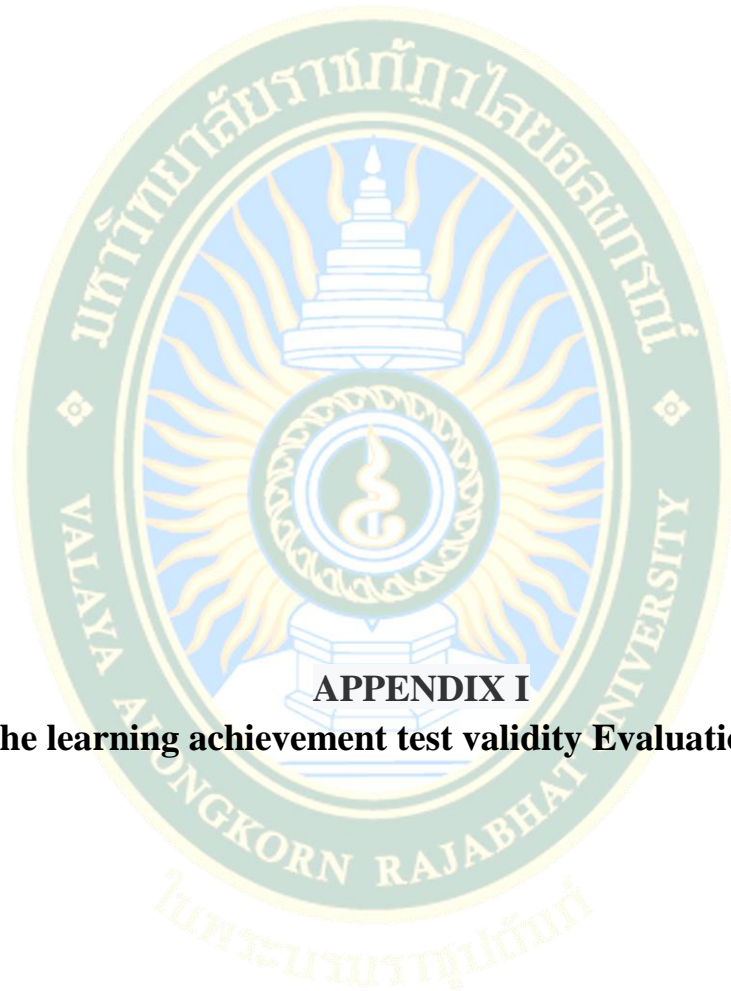
APPENDIX I
The learning achievement test validity Evaluation Table

The learning achievement test validity Evaluation Table

Item No.		Expert 1	Expert 2	Expert 3	Total Score	The IOC Index Mean of Expert Score	Sum up
lesson plan design test	1	1	1	1	3	1	Can be used
	2	1	1	1	3	1	Can be used
	3	1	1	1	3	1	Can be used
	4	1	1	1	3	1	Can be used
	5	1	1	1	3	1	Can be used
explaining lessons video test	1	1	1	1	3	1	Can be used
	2	1	1	1	3	1	Can be used
	3	1	1	1	3	1	Can be used
	4	1	1	1	3	1	Can be used
	5	1	1	1	3	1	Can be used

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APPENDIX J
The item difficulty and item Discriminability measurement table

The item difficulty and item Discriminability measurement table

Item （full score）	Total scores of High score group	Total scores of Low score group	$P_H = \dfrac{\sum H}{\sum T_H}$	$P_L = \dfrac{\sum L}{\sum T_L}$	Difficulty $P = \dfrac{P_H + P_L}{2}$	Discrimination $r = P_H - P_L$
Part1(Item1) （20 scores）	336	20	0.50	0.05	0.27	0.45
Part1(Item2) （20 scores）	304	20	0.45	0.05	0.25	0.40
Part1(Item3) （20 scores）	432	20	0.64	0.05	0.35	0.60
Part1(Item4) （20 scores）	304	20	0.45	0.05	0.25	0.40
Part1(Item5) （20 scores）	448	30	0.67	0.07	0.37	0.60
Part2(Item1) （20 scores）	450	27	0.71	0.07	0.39	0.64
Part2(Item2) （20 scores）	390	27	0.62	0.07	0.35	0.55
Part2(Item3) （20 scores）	364	27	0.62	0.07	0.35	0.55
Part2(Item4) （20 scores）	255	27	0.40	0.07	0.24	0.33
Part2(Item5) （20 scores）	360	36	0.57	0.10	0.33	0.48
					P=0.2-0.8	r＞0.2

APPENDIX K
Cronbach's Alpha Coefficient of the learning achievement test measurements

Cronbach's Alpha Coefficient of the learning achievement test measurements

Reliability

[数据集1]

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	42	100.0
	Excluded[a]	0	.0
	Total	42	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.844	.844	10

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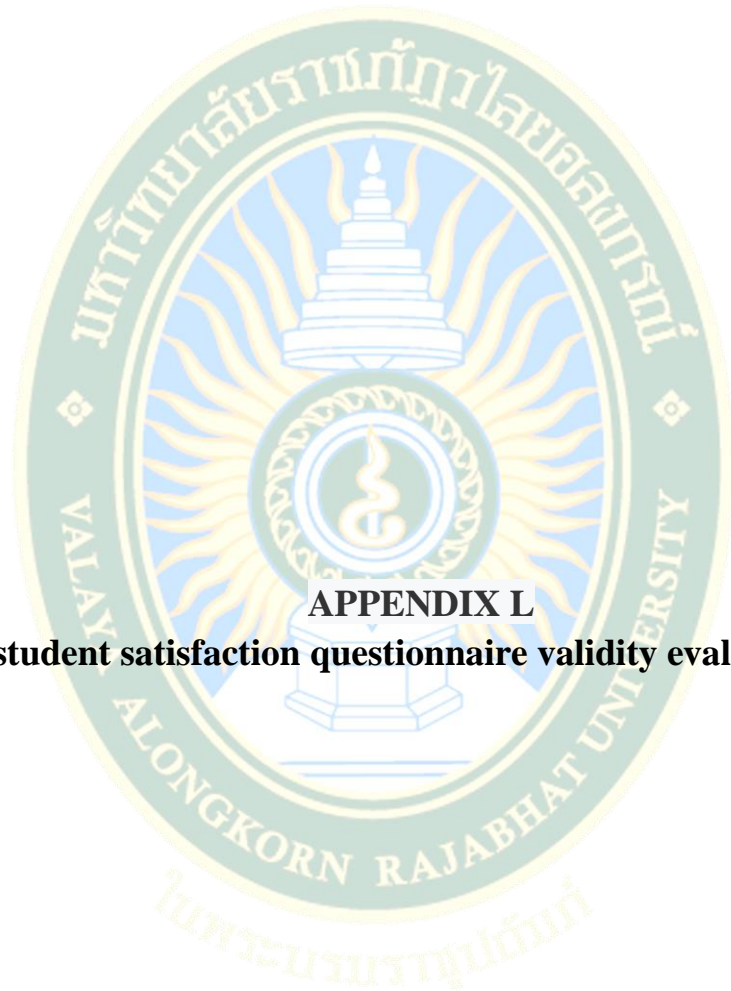
APPENDIX L
The student satisfaction questionnaire validity evaluation form

The student satisfaction questionnaire validity evaluation form

Item No.	Expert 1	Expert 2	Expert 3	Total Score	The IOC Index Mean of Expert Score	Sum up
1	1	1	1	3	1	Can be used
2	1	1	1	3	1	Can be used
3	1	1	1	3	1	Can be used
4	1	1	1	3	1	Can be used
5	1	1	1	3	1	Can be used
6	1	1	1	3	1	Can be used
7	1	1	0	2	0.67	Can be used
8	1	1	1	3	1	Can be used
9	1	0	1	2	0.67	Can be used
10	1	1	1	3	1	Can be used
11	1	1	1	3	1	Can be used
12	1	1	1	3	1	Can be used
13	1	1	1	3	1	Can be used
14	1	1	1	3	1	Can be used
15	1	1	1	3	1	Can be used
16	1	1	1	3	1	Can be used

APPENDIX M
Cronbach's Alpha Coefficient of the student satisfaction
questionnaire measurements

Cronbach's Alpha Coefficient of the student satisfaction questionnaire measurements

Reliability

[数据集2]

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	42	100.0
	Excluded[a]	0	.0
	Total	42	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.880	.883	16

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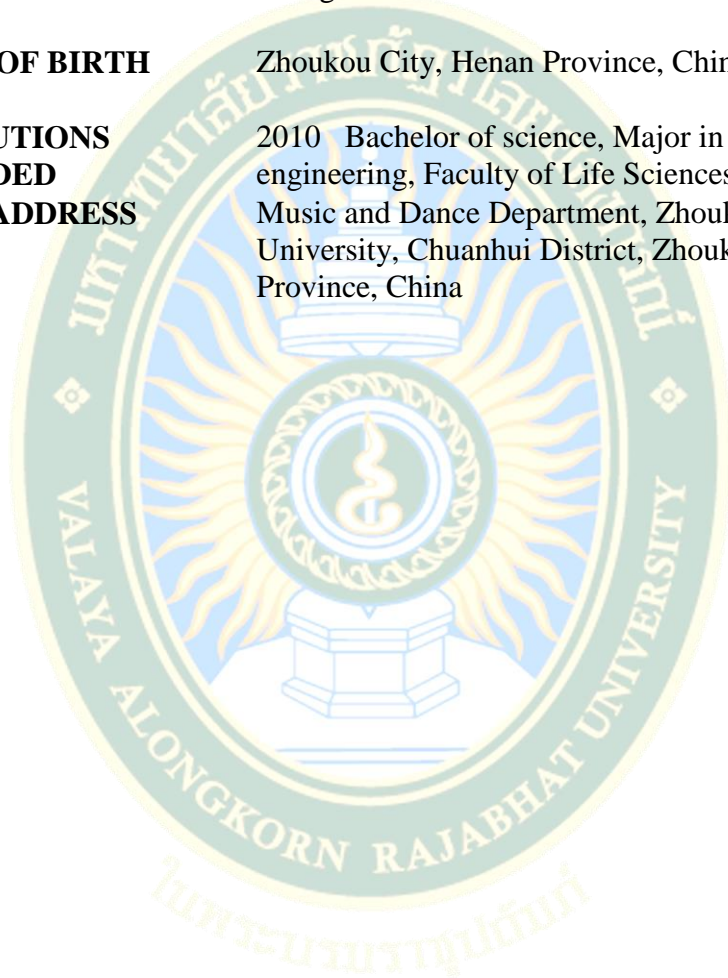
NAME   Mr.Guo Feifei

DATE OF BIRTH   9 August 1986

PLACE OF BIRTH   Zhoukou City, Henan Province, China

INSTITUTIONS   2010   Bachelor of science, Major in biological
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HOME ADDRESS   Music and Dance Department, Zhoukou Normal
                      University, Chuanhui District, Zhoukou city, Henan
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