

The Learning Management Through the Student Team Achievement Division Combined with Mind Mapping Techniques to Develop Learning Achievement For 1st Year of Secondary Vocational Students

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Abstracts

The objectives of this research were to: 1) compare the pre-and post-learning achievement of 1st-year secondary vocational students studying through the traditional approach, 2) compare the pre-and post-learning achievement of the students studying through the Student Team Achievement Division combined with Mind Mapping techniques, and 3) compare the postlearning achievement of students studying through the traditional approach and the learning management through the Student Team Achievement Division combined with Mind Mapping techniques. The research sample was 40, selected by cluster random sampling, 1st year of tourism major students at the secondary vocational school, Beijing, China in the academic year 2022. The research instruments consisted of 1) a learning management plan based on the traditional approach, 2) a learning management plan based on Student Team Achievement Division combined with Mind Mapping techniques, and 3) a learning achievement test. The statistics used for data analysis were mean, standard deviations, independent samples t-test, and dependent samples t-test. The research results showed that: 1) the post-learning achievement of 1st-year secondary vocational students studying through the traditional approach was higher than the pre-learning at a statistical significance level of .05., 2) the post-learning achievement of students studying through the Student Team Achievement Division combined with Mind Mapping techniques was higher than the pre-learning at a statistical significance level of .05., and 3) the students learning achievement of those studying through the Student Team Achievement Division combined with Mind Mapping techniques was higher than those studying through the traditional approach at a statistical significance level of .05.

Keywords: Student Team Achievement Division; Mind Mapping; Learning Achievement

Introduction

The important role of vocational education in China's education system has been re-emphasized in the Implementation Plan of National Vocational Education Reform released by The State Council in 2019. The plan points out that under the condition that the framework of China's modern vocational education system has been preliminarily perfected, vocational education has become an important driving force for the upgrading of China's industrial structure and economic development, and an important basis for training all kinds of professional and technical personnel (Bai, S, 2016 : 74-78). At the same time, the "plan" also clearly put forward the concept of strengthening the development of secondary vocational

education in China, providing a good external policy environment for the development of secondary vocational education.

In the vocational education system, the training of tourism professionals is an important basic major and subject. This is mainly due to the rapid development of China's tourism industry in recent years, the tourism demand structure is gradually optimized, and the demand for professional tourism professionals is increasing rapidly. As an important base for training intermediate tourism professionals who combine theory and practice, secondary vocational tourism plays an increasingly prominent role in the development of China's tourism industry (Chen, D, 2018 : 84-86). In the tourism industry, the proportion of tour guides accounted for more than 80%. For tour guides, the relevant theoretical knowledge and practical skills required to master are multifarious, and the learning and mastering of this knowledge and skills should be based on a solid foundation of basic knowledge of tour guides (Crocker, L. and Algina, J, 1986). Therefore, it is directly related to the service quality and level of the tour guide practitioners, as well as the development potential of personal careers (Fran, Purwati, 2014 : 9). As a compulsory course for students majoring in secondary vocational tourism, basic knowledge of tour guides plays a very important role in teaching secondary vocational tourism. However, due to the vast territory of China, there are great differences in culture and customs which lead to the content of the course "Basic Knowledge of tour guides" being numerous and boring. Additionally, the knowledge structure is complex and extensive. At the same time, the vast majority of secondary vocational schools still use the traditional "lecturing" mode in teaching this course. The student's learning enthusiasm is not high and the teaching effect is poor.

The course "Basic Knowledge of Tour Guides" has more teaching content with strong theory in which students need to recite a lot of knowledge points. Students in secondary vocational schools usually do not have the basic knowledge related to tour guides, and the traditional "cramming" teaching method is easy to cause resistance among students, resulting in the low initiative and enthusiasm of students in learning, and the teaching quality cannot be effectively improved for a long time. Under the modern secondary vocational education system, how to improve the teaching quality of "Basic Knowledge of Tour Guides" for secondary vocational tourism major students and help them better master the theoretical knowledge required for the occupation of tour guides is one of the main problems in the teaching of tourism major in domestic secondary vocational schools.

Through the analysis of the teaching content of Basic Knowledge of Tour Guides in secondary vocational schools, it is concluded that this course has two main characteristics: a large amount of basic knowledge, strong systematization, and few difficulties in knowledge, but great difficulty in memory. This is also the main problem faced by secondary vocational schools in the teaching of "Basic Knowledge of Tour Guides", that is, under the traditional "lecturing" class, the learning process is relatively boring, students' learning initiative is not high, and usually cannot reach the expected teaching objectives.

This research mainly aimed at the learning achievement of the Basic Knowledge of Tour Guide course. The main basis of this study is Mind Mapping and Student Teams Achievement Division teaching mode, together with constructivist learning theory and information processing theory are also used as theoretical support.

STAD teaching refers to Student Teams Achievement Division, in which students are divided into groups according to the distribution of scores. Each teaching group member reflects the overall distribution of students' scores (Gustiawan, D, and Bisri, H., 2018 : 374-

386). It is a teaching method of cooperative learning mode. Student Teams Achievement Division was designed by Gustiawan and Bisri in 2018. Teaching activities include Class Presentations, Team Study, Student tests, Score Calculation, and Team Recognition. Student Teams Achievement Division teaching method can improve students' school effect overall by employing group study and progress together (Hong, B. Q, 2021 : 54-58).

Tony Buzan's mind map is a famous British scholar in late 1970 as an auxiliary tool. Thinking can be related to the theme information and integrating semantic, cognitive, and connected into a system of cognitive image, with a highly visual, divergent, systemic, intuitive, etc., can be associated with knowledge, methods, and concepts for effective integration (Indah, Pidarta, and Prasetyo, 2018 : 4). It provides support for learners' knowledge structure, improves memory efficiency, and can also be used in the creative thinking process (Jamaludin, M, and Mokhtar, M. F, 2018 : 1251-1267).

The "mind map" is the basis of the teaching method innovation, visualization of curriculum knowledge organization and knowledge structure, and design of a more flexible STAD teaching mode that stimulates students' autonomous learning ability and learning enthusiasm to improve the teaching quality of Basic Knowledge of Tour Guide in secondary vocational schools. In this study, to improve the teaching quality of basic Knowledge of Tour Guides in secondary vocational schools, a STAD (Student Teams Achievement Division) teaching mode based on "Mind Mapping" is proposed to guide students in drawing a visual network structure map of basic tourism knowledge, and help students better understand and remember this knowledge by grouping teaching based on the student's grades.

Research Objectives

1. To compare the pre-and post-learning achievement of 1st-year secondary vocational students studying through the traditional approach.
2. To compare the pre-and post-learning achievement of the students studying through the Student Team Achievement Division combined with Mind Mapping techniques.
3. To compare the achievement of students studying through the traditional approach and the learning management through the Student Team Achievement Division combined with Mind Mapping techniques

Research Methodology

The design of the study is quasi-experimental research in which the experimental design was the pretest–posttest control group design. The research sample was 67, selected by cluster random sampling, students studying in 1st year of tourism major at the secondary vocational school in Beijing, China, during the academic year 2022. The research sample was divided 2 classes: 1) one class of 34 students were selected as the experimental group with learning management through the Student Team Achievement Division combined with Mind Mapping techniques for the course "Basic Knowledge of Tour Guides", and 2) one class of 33 students, was selected as the control group with learning management through the traditional approach. Variables in this research were classified as independent and dependent variables. The independent variable consisted of 2 types of learning management: 1) the traditional approach consisting of Introduction, Instruction, and Conclusion, 2) the Student Team Achievement Division combined with Mind Mapping techniques consisting of: Step1: Presentation of the class, Step2: Learning group and create mind mapping, Step3: Test or

quiz and improve mind mapping, Step 4: Score increase in the individual, and Step 5: Award group. The dependent variable was the learning achievement test in the Basic Knowledge of Tour Guides. The research instruments were classified into 2 types for the experiment and for data collection as follows: 1) A learning management plan based on the traditional approach in the Basic Knowledge of Tour Guides for 1st year of secondary vocational students. 2) A learning management plan based on the Student Team Achievement Division combined with Mind Mapping techniques in the Basic Knowledge of Tour Guides for 1st year of secondary vocational students. The learning management plans of the traditional approach and the Student Team Achievement Division combined with Mind Mapping techniques were comprised of 3 chapters as follows: Chapter 1: Knowledge of Chinese History and Culture, Chapter 2: Geological and Geomorphological Tourism Landscape, and Chapter 3: Scenic Water Tourism Landscape. The analysis results showed that the IOC value was at 1.00. And 3) A learning achievement test on the Basic Knowledge of Tour Guides. The test is conducted according to the chapters. The test contains 30 multiple-choice questions, each question has 4 choices. The analysis results showed that the IOC value was at 1.00., the difficulty was between 0.40 - 0.80, and the discriminating was between 0.40 - 0.80. The analysis used for hypothesis testing is as follows: 1) to compare pre-and post- students' learning achievement of those studying through the traditional approach and those studying through the Student Team Achievement Division combined with Mind Mapping techniques, the dependent samples t-test was employed, and 2) to compare pre-and post- students' learning achievement of those studying through the traditional approach and those studying through the Student Team Achievement Division combined with Mind Mapping techniques, the independent samples t-test was employed.

Research Conceptual Framework

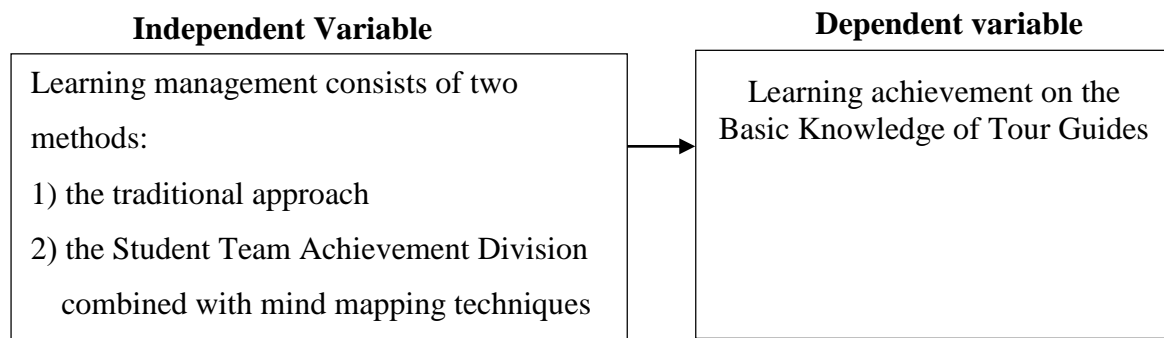


Figure 1 Conceptual Research Framework

Research Results

1.The pre-and post- students' learning achievement comparative analysis of those studying through the traditional approach.

Table 1 Mean, Standard Deviation, dependent samples t-test, and the level of statistical significance in the analysis to compare the learning achievement before and after learning management through the traditional approach.

| The learning management through the traditional approach | n | \bar{x} | s | t | df | Sig. |
|--|----|-----------|-------|---------|----|-------|
| Before | 20 | 16.10 | 1.861 | 15.377* | 19 | 0.000 |
| After | 20 | 19.15 | 1.927 | | | |

From Table 1, it was found that the students' learning achievement has a mean before the learning management through the traditional approach at 16.10 ($\bar{x} = 16.10$, $S = 1.861$) and after learning at 19.15 ($\bar{x} = 19.15$, $S = 1.927$). When comparing the test scores for both tests, it was found that students' learning achievement after learning management through the traditional approach was higher than before at the statistical significance level of .05.

2.The pre-and post- students' learning achievement comparative analysis of those studying through the Student Team Achievement Division combined with Mind Mapping techniques.

Table 2 Mean, Standard Deviation, dependent samples t-test, and the level of statistical significance in the analysis to compare the learning achievement before and after the learning management through the Student Team Achievement Division combined with Mind Mapping techniques.

| The learning management through the STAD combined with Mind Mapping techniques | n | \bar{x} | s | t | df | Sig. |
|--|----|-----------|-------|---------|----|-------|
| Before | 20 | 18.50 | 1.606 | 11.261* | 19 | 0.000 |
| After | 20 | 23.20 | 1.399 | | | |

From Table 2, it was found that the students' learning achievement has a mean before the learning management through the Student Team Achievement Division combined with Mind Mapping techniques at 18.50 ($\bar{x} = 18.50$, $S = 1.606$) and after at 23.20 ($\bar{x} = 23.20$, $S = 1.399$). When comparing the test scores for both tests, it was found that students' learning achievement after learning management through the Student Team Achievement Division combined with Mind Mapping techniques was higher than before at the statistical significance level of .05.

3.The post- students' learning achievement comparative analysis of those studying through the traditional approach and through the Student Team Achievement Division combined with Mind Mapping techniques.

Table 3 Mean, Standard Deviation, Independent samples t-test, and the level of statistical significance in the test comparing the 2 groups of the learning achievement through the traditional approach and Student Team Achievement Division combined with Mind Mapping techniques.

| Learning Management | n | \bar{x} | s | t | df | Sig. |
|--|----|-----------|------|---------|----|-------|
| Traditional approach | 20 | 19.15 | 1.93 | -7.606* | 38 | 0.000 |
| STAD combined with Mind-Mapping techniques | 20 | 23.20 | 1.40 | | | |

From Table 3, it was found that the test for the difference in the means of 2 groups of students' learning achievement has a mean after the learning management through the traditional approach at 19.15 ($\bar{x} = 19.15$, $S = 1.927$) and through the Student Team Achievement Division combined with Mind Mapping techniques at 23.20 ($\bar{x} = 23.20$, $S = 1.399$). Therefore, from the independent samples t-test, it was found that the mean between the students' learning achievement with learning management through the Student Team Achievement Division combined with Mind Mapping techniques was higher than through the traditional approach at the statistical significance level of .05.

Discussion

1. The comparative results of pre-and post-students' learning achievement in Basic Knowledge of Tour Guides of those studying through the traditional approach showed that the post-learning achievement was higher than the pre-learning at the statistical significance level of .05. This may result from the traditional teaching being the most direct and effective method. Teachers control and inspire students effectively when the students encounter problems or arise conflicts. Teachers take flexible teaching methods adjusting the content according to the actual requirement under the general teaching arrangement which is not only conducive to cultivating the basic technique but also for the good habit of forming students' self-study ability. Teachers' actions and language become the target imitated by learners whose outlook towards right and wrong, attitude, value orientation, and academic level have a great impact on students (Jenkins, A, 2019 : 85). So, after traditional teaching, students' scores are higher than before and causing certain teaching effects. This reason is that the after-learning achievement through the traditional approach was higher than the before-learning management.

2. The comparative results of pre-and post-students' learning achievement in Basic Knowledge of Tour Guides of those studying through the Student Team Achievement Division combined with Mind Mapping techniques showed that the post-learning of those studying through the Student Team Achievement Division combined with Mind Mapping techniques was higher than before at the statistical significance level of .05. This may cause by such a learning type. It will be more effective if students are also allowed to contribute directly and develop creativity in pouring ideas. According to Theory and Vygotsky's theory, they believe knowledge arises from learners' creation by participating in the search for knowledge and interacting with friends. When knowledge is found beyond the level of wisdom to study by oneself, friends who study better than teaching, increase academic achievement such as the use of mind-mapping techniques in learning (Ji Y. L, 2020 : 4300-4308). One of the benefits of using collaborative learning is enhancing learning achievement and increasing social skills.

The second benefits are as the more students work together in collaborative groups, the more they understand, retain, and feel better about themselves and their peers. Moreover, working together in a collaborative environment encourages student responsibility for learning. In addition, this method of teaching is combined with mind-mapping techniques which can be an excellent alternative to applied learning because it can help a person understand concepts and memorize information with a learning tool by utilizing his creativity. Furthermore, this research is also supported by Johnson, D. and Stanne M., (2000 : 455-468), who studied the development of science process skills and learning achievement of Mathayomsuksa 4 students on “Genetic Transformation” using Cooperative learning: Student Teams Achievement Division (STAD) integrated with Mind Mapping. At this point, it was found that the students’ post-learning achievement was higher than the pre-learning at the .01 statistical significance level. The reason is that learning achievement after studying through the Student Team Achievement Division combined with Mind Mapping techniques was higher than before.

3. The post-learning achievement comparative results of the 1st year of secondary vocational students learning in the Basic Knowledge of Tour Guides between those studying through the traditional approach and the Student Team Achievement Division combined with Mind Mapping techniques found that those studying through the Student Team Achievement Division combined with Mind Mapping techniques was higher than those studying through the traditional approach at the statistical significance level of .05. This may result from Student Team Achievement Division is a kind of cooperative learning in which students work in a group of four or five. The Student Team Achievement Division's learning model also has a goal that students' academic learning outcomes are improved. Students can receive a variety of diversity from their peers and develop social skills. To eliminate inconsistencies in student accomplishment, it is strongly advised that the student-oriented learning process be used in a variety of cooperative learning models for all disciplines in educational units led by qualified teachers. (Johnson, J, 2009 : 365-379). Therefore, different from traditional teaching, the steps of the Student Team Achievement Division (STAD) model skillfully integrate cooperative learning and learning evaluation and takes the assessment of a student's academic progress score as the evaluation standard so that everyone can achieve results instead of being limited to the final academic achievement of students (Linxin, L. and Jianjun G., 2019 : 245-247).

Theoretically, learning with STAD-type, cooperative learning model is better than the traditional learning approach. In STAD-type or cooperative learning, students must think and cooperate with their group in doing the LAS, helping each other, and ensuring that each student must understand the material (Margulies, N, 2002 : 122-134). In addition, it is combined with mind-mapping techniques which can help students construct a knowledge framework, promote their overall grasp of the curriculum, and strengthen their thinking logic and memory abilities through the completion of the mind map. It is beneficial for learning. (Pan, Q, 2021 : 48-50). Furthermore, this research is also supported by Purba, I. (2018 : 102-111) who studied the effect of cooperative learning on academic achievement in Physics and it was found that students in the experimental group taught by cooperative learning (STAD technique) were more successful than those in the control group. At this point, it is found that cooperative learning increases students' academic achievement to a higher level when compared to the traditional teaching method. It is consistent with the research results of Ying, Q. (2021 : 86-89) who studied the Effectiveness of Students’ Team Achievement Division on Students’ Attitudes toward Physics. The study showed that the problem-solving ability of the experimental group taught through STAD was significantly higher than the control group who

learned through the traditional teaching method. This reason is that learning achievement with learning management through the Student Team Achievement Division combined with Mind Mapping techniques was higher than the traditional approach.

Suggestions

1. Suggestions for applying the research results

Cooperative learning focuses on the interaction between individuals and group members to promote learning which not only improves the cognitive ability of individuals but also promotes the occurrence of win-win cooperation in groups. This is an unparalleled advantage of other teaching methods. This requires learners to maintain a friendly and mutually supportive relationship with their members in the cooperative learning process in which the learning effects of individuals and others are closely related and it is even more necessary for learners to cooperate fully. In this process, cooperative learning effectively promotes the development of students' intelligence in different modules and also helps promote the positive emotions of mutual learning between students. The effect is that collective wisdom is greater than the one-way struggle of individuals. Thus, applying cooperative learning to the teaching design of the course "The Basic Knowledge of Tour Guides" helps develop a cooperative learning group formation method that is suitable for the actual situation of the class, adjusts it according to the actual situation, develops an atmosphere of group learning and mutual assistance, with a focus on mastering the methods of learning knowledge, mastering learning methods, and subsequently obtaining knowledge. At the same time, it is also an important means to improve the comprehensive quality of students.

2. Suggestions for future research

For further research, the topic should be focused on:

- 1) The learning management through the Student Team Achievement Division combined with Mind Mapping techniques to improve other skills or competencies.
- 2) The learning management through the Student Team Achievement Division combination with other techniques.
- 3) The learning management through others-operative learning combined with other techniques with mind mapping techniques to improve the student's learning achievement.

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