

The Effectiveness of Self-Regulated Learning via Infographics on the Topic of the Traditional Chinese Artisan Tools: A Case Study of Sichuan Vocational College of Health and Rehabilitation, Republic of China

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Abstract

The objectives of this study were to: 1) compare learning achievement after using infographics of traditional Chinese artisan's tools, 2) study the effectiveness after using infographics of traditional Chinese artisan's tools, and 3) explore student's satisfaction after using infographics of traditional Chinese artisan's tools. The population of this study were 30 students from Sichuan Health Rehabilitation Vocational College in the first semester of 2023. The research instruments included 1) infographics of traditional Chinese artisan's tools and 2) learning achievement papers. The results showed that: 1) the achievement scores after using infographics of traditional Chinese artisan tools were different at a statistical significance level of .05 ($t=29.373$, $p=.000$), 2) the effectiveness after using infographics of traditional Chinese artisan's tools could improve the achievement scores in art design which was 0.6253, in other words, students had higher post-test scores of 62.53 percent of cognitive score improvement, and 3) students had the highest satisfaction after using infographics of traditional Chinese artisan's tools ($=4.86$, $SD = 0.34$).

Keywords: Infographics, Effectiveness, Self-Regulated, Republic of China

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Introduction

Background of Statement

China's Higher Education SDGs Action Report released the Sustainable Development Goals (SDGs), which are 17 goals unanimously adopted by United Nations member states in 2015, including no poverty, zero hunger, good health and well-being, quality education, etc. It aims to solve the major problems facing the common human society. The China Higher Education SDGs Action Report aims at disseminating the concept of sustainable development to the public, showcases the achievements of China's higher education sustainable development work, focuses on 17 sustainable development goals such as poverty eradication, public health, life and health, digital economy, green development, and climate change, and quantifies data by scientific research output. It reviewed the progress and achievements made by China's higher education in implementing the 2030 Agenda for Sustainable Development from 2016 to 2020, highlighting the achievements of Chinese universities. Among them, SDG4 ensures inclusive and equitable quality education, promotes lifelong learning opportunities for all, and expands higher education and lifelong learning opportunities.

The main reason for the problems with the learning methods and curriculum of art courses is that the traditional education system pays more attention to the instillation of theoretical knowledge in art courses, while neglecting the cultivation of creative thinking and practical experience. This results in students often facing problems such as the disconnect between theory and practice and lack of creative thinking and expression skills in their studies.

The study of art courses needs to focus on practice. Traditional art courses often focus on the teaching of theoretical knowledge and use a large number of explanations and demonstrations in class, leaving little opportunity for students to engage in actual creation and performance. This method can easily cause students to only stay at the theoretical level and find it difficult to deeply understand the essence and essence of art. Therefore, practical courses should be added to the curriculum, focusing on the interaction and practice of students' participation in artistic activities, thereby promoting students' learning methods that combine theory and practice.

Secondly, the study of art courses needs to focus on individualization. Traditional art course arrangements often apply general curriculum plans and lack personalized teaching for different students. In actual teaching, each student has his own characteristics and style. Students' personality and expertise should be fully respected, and they should be encouraged to use their creativity and imagination. Therefore, the curriculum should explore diversified teaching methods, conduct corresponding personalized teaching according to the different situations of students, and help students better explore their potential and advantages.

Purpose

Among art students, some students have low cultural scores, in art course learning, there are problems of low self-efficacy and insufficient learning confidence. In my classroom, there are some problems in art courses, such as lack of individualized teaching, limited creative thinking, and disconnection between theory and practice. The traditional teaching mode often adopts the unified teaching content and evaluation standard, ignoring the individual differences and characteristics of students. Informational graphics are very necessary to solve these problems. Informational charts can integrate and present a large amount of student data

and teaching resources to help teachers understand students' needs and learning situations more comprehensively. Informational charts can provide personalized teaching plans and evaluation methods, promote students' development and growth, and make teaching more targeted and effective. In addition, information graphics can also provide a wealth of practical cases and skill teaching, helping students combine theory with practice and cultivate creative thinking and practical operation abilities. Therefore, in the previous research, this paper combined with the main characteristics of vocational school students, using the method of combining theory and practice, to explore the feasibility and effectiveness of infographic in teaching. Based on the United Nations SDG4 on equitable education, this paper takes the students of Sichuan Health Rehabilitation Vocational College as an example, and adopts infographic teaching technology to improve the art design performance of the students with poor performance. The researcher would like to focus on the following research questions:

- 1) Have infographics be used effectively in art design teaching?
- 2) How is the differences in scores before and after using the infographic?
- 3) How about the effectiveness of achievement scores after using infographic?
- 4) How about the student opinion after using infographic?

Research Objectives

- 1) To study about the validity of the infographics for using to teaching.
- 2) To compare learning achievement between pretest and posttest scores.
- 3) To Comparing the learning achivement of art in this research the course instruction by using infographic.
- 4) To study about the Student satisfaction.

Conceptual Framework

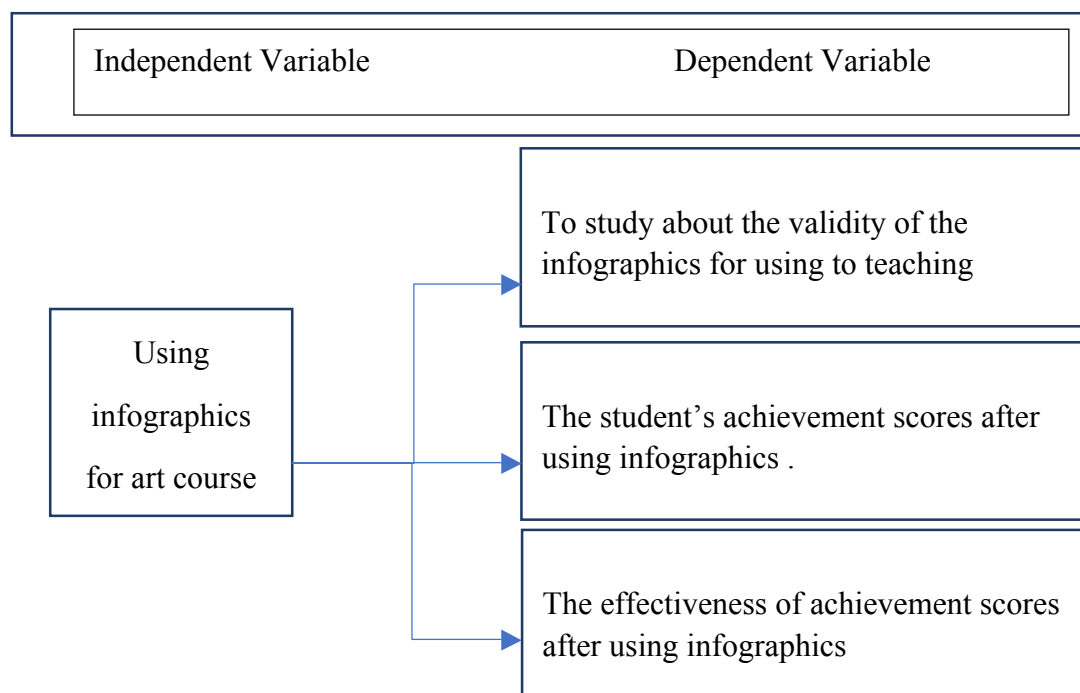


Figure 1: Research framework for the improvement of Achievement scores of students

Definition of Keywords

1. Infographics

Infographics are visual presentations of information and data designed to present complex information easily and quickly. In simple terms, infographics attempt to present a set of data and complex information in a visual way that readers can quickly and easily understand by utilizing visual elements such as images, graphs, maps, and charts. Today's students have been living in an auditory, visual and multimedia dynamic environment since birth, and the use of past methods and teaching models is boring and ineffective for them, unable to produce satisfactory teaching results. Teachers need to be informed about new technologies and media in teaching and learning and have a positive attitude towards them. Research shows that using modern technology in the classroom can lead to better learning experiences and higher classroom satisfaction for students.

2. Effectiveness

Effective learning refers to the learning in line with the principles of education and teaching, its purpose is to spend less time, learn more, more solid, better, with the right way of learning to achieve twice the result with half the effort. Effective learning should be to help students spend less time, gain more knowledge, let students "learn one know ten"; Effective learning should make learning more interesting, it should not make students feel boring, but should be "edutainment".

3. Self-Regulated

Self-Regulated Learning (SRL), proposed by American psychologist Bandura in the 1970s, means that learners actively motivate themselves and actively use appropriate learning methods to learn. It can not only be regarded as a dynamic learning process or learning activity, but also as a relatively stable learning ability. Learners must have four conditions for self-regulated learning. Self-regulated learning is a circular process.

Research Methodology

Research Design

The research design was conducted according to the following structure in the objective of the research; it has been moving with steps as flowing:

The researcher used a quantitative approach in experimental design for conducting this study. The data was collected in a quantitative or numerical form derived from the test, and the experimental data of this study mainly consisted of pre-test experimental data and post-test experimental data.

Group: O1 x O2

O1 = Measurement of the pretest score

X = Infographic teaching to enhance learning achievement

O2 = Measurement of the achievement of the posttest score

The sample for this study was 30 students. They were the worst of the 60 students. The front side of 60 students, after the test to select the underperforming students. With 70 points as the standard, students with more than 70 points pass, and students with less than 70 points do not

pass, and infographic teaching method is adopted for students who do not pass. Through comparison, independent t test was used to explain.

Research Materials

The subjects selected for this experiment are 30 students from my 60 students in Sichuan Health Rehabilitation Vocational College. Our school is a national public vocational school with students from higher vocational colleges. As a teacher in a higher vocational school, I participate in the guidance of classroom teaching and carry out research on the effectiveness of classroom implementation.

The study was divided into two parts: the investigation test stage and the infographic teaching experiment stage, which lasted for 4 weeks, two lessons per week for one month.

The first step of the infographic teaching experiment: two weeks before the experiment, questionnaire survey and prediction of students' design ability were conducted to understand the problems existing in students' learning.

The second step was infographic teaching, which lasted for 4 weeks.

The third step is to test the teaching effect. In the last week of the experiment, students' artistic design ability and satisfaction survey are conducted, and then summarized.

Teaching process:

- Step 1: The researcher studied theories of the art creative direction and the design plan to develop the questions in the pretest, posttest.
- Step 2: The pretest, posttest was reviewed by the researcher's advisor and other experts in the field.
- Step 3: The pretest, posttest was piloted with 30 students.
- Step 4: 30 students were selected from the 60 students, in school of Sichuan Health Rehabilitation Vocational College, China, were assigned to complete the pretest. The test time was approximately half an hour.
- Step 5: The researcher created the lesson plan using infographic teaching improve the low scores students. This lesson plan was designed for four weeks and approved by the researcher's advisor and experts in the field.
- Step 6: The researcher ran the class based on the lesson plan. The students were taught infographic for four weeks. After that, they were assigned to complete both the post-test. The test time was approximately half an hour.

Research Results

1. Three Content Experts Put Forward the Idea of Improving the Learning Outcomes of Art Design for Vocational Students

The 10 items of evaluation consist of the form issued by three contents experts. A 5-point rating scale is utilized in this section to represent the content experts' opinion. Each criterion rating is identified as illustrated in Table below:

Table 1: The 10 items of evaluation

Evaluation Items	\bar{X}	S.D.	Result Interpretation
1. Consistency between content and learning objectives.	4.33	0.58	Good
2. The content is interesting.	5.00	0.00	Excellent
3. The content increases students' interest.	4.67	0.58	Good
4. The capacity of each activity is appropriate.	4.33	0.58	Good
5. Content sorting is appropriate.	5.00	0.00	Excellent
6. Content accuracy.	4.00	0.00	Good
7. The content is in line with the situation of Chinese higher vocational students.	5.00	0.00	Excellent
8. Activities are consistent with the content.	5.00	0.00	Excellent
9. Infographics stimulate learners' interest in learning.	5.00	0.00	Excellent
10. The overview of the content is complete.	5.00	0.00	Excellent
Total	4.73	0.17	Excellent

From Table 1, shows the evaluation results of three content experts on the content quality of infographic based teaching to improve art design learning outcomes. The overall quality was excellent ($\bar{X}=4.73, S.D.=0.17$). When considering each project, it was found that the content was interesting, the content was properly organized, the content was in line with the actual situation of Chinese vocational college students, the activities were consistent with the content, the content of micro-lessons stimulated learners' interest, and the content was complete in summary, respectively reaching the excellent level ($\bar{X}=5.00, S.D. = 0.00$).

2. The Efficiency of Using Infographics to Enhance Learning Achievement of Vocational Scores Lowest Students

Table 2: The average score of the pre-test

Average Pretest score	Average Posttest score	Total of pre-test scores	Total of post-test scores	Full scores multiplied by the number of students	Effectiveness Index (E.I.)
63.17	86.20	1895	2586	100 x 30	0.625

From Table 2, the average score of the pre-test is 63.17, and the average score of the post-test is 86.20, indicating that the infographic teaching method has a great improvement in improving the artistic design learning performance of vocational students. The results show that the value of the effective index (E.I.). The result revealed that the value of Effectiveness Index (E.I.). as 0.62 or calculated as 62 percentage. To sum up, this infographic teaching method has improved the learning results of art design for vocational college students.

3. Compare the Learning Achievement of Students Between Pre-test and Post-test Scores Using Infographic

Table 3: The effect of learning based on infographic on improving the artistic design achievements of vocational college students

Items	n	\bar{X}	S.D.	df	t-test	Sig.(2-tailed)
Pre-test	30	63.17	1.48	29	29.3	0.000
Post-test	30	86.20	1.91			

**p< .05

The mean difference is significant at the 0.05 level.

The table 3 shows the effect of learning based on infographic on improving the artistic design achievements of vocational college students. The mean pre-test score was 63.17, and the standard deviation (sd) score was 1.48. After the application of infographic-based learning to improve the learning performance of art design in higher vocational students, the students' academic performance was significantly improved, with the post-measured height value of 86.20, standard deviation (sd) of 1.91 and t-test analysis before and after the treatment 29.3 which demonstrated a considerable difference was statistically significant at the .05 level.

Summary of the Results

Results of evaluation efficiency of using infographic to improve the art scores of the low achievement students. The average score of the pre-test was 63.17 points, and the average score of the post-test was 86.20 points, indicating that the infographic teaching mode has a great promotion effect on improving the artistic design learning performance of higher vocational students. The results show that the value of the effective index (E.I.). The result revealed that the value of Effectiveness Index (E.I.). as 0.62 or calculated as 62 percentage.

Based on the concept of infographic teaching, the class has improved the learning performance of secondary vocational students in art design and improved their academic performance.

Three content experts evaluated the evaluation results of micro-classroom content quality based on infographic teaching to improve art design learning outcomes of vocational college students. The overall quality was excellent ($\bar{X}= 4.73, S.D. = 0.17$). The results show that teaching based on infographic can improve students' performance in art design.

When considering each project, it was found that the content was interesting, the content was reasonably organized, the content was in line with the actual situation of Chinese vocational college students, the activities were consistent with the content, the infographic content stimulated the interest of learners, and the content integrity reached the excellent level ($\bar{X}= 5.00, S.D. = 0.00$).

When considering each project, we found that "making it easier for students to understand what they are learning", "making it easier for students to understand what they are learning" and "details are clear and understandable" were respectively excellent levels ($\bar{X}=5.00, S.D. = 0.00$). The order and content of the activities are appropriate, able to present the learning content clearly, these activities are suitable for learners and easy for students to use were scored at high levels ($\bar{X}=4.33, S.D.= 0.58$). The results of this experiment are basically consistent with those of similar studies.

Conclusion

In my study use infographic to improve the art scores of the low achievement students.

Discussion and Recommendation

The classroom application of infographic teaching concept should be carried out step by step according to the best practices in the field, so that researchers can achieve the goal of building a classroom application curriculum based on infographic teaching concept, so as to improve efficiency and achieve greater success.

Infographic-based classroom development allows for more interesting activities to be designed by adding images, sounds and video clips. His plan will help attract students to participate in activities and enjoy more sports.

Art and design have had a profound impact on the surrounding market, and the impact of this course can be further expanded through the use of infographic-based teaching classrooms. At the same time, this research method can also provide reference for other disciplines.

Based on the summary and discussion of this study, the researchers' suggestions for further research are as follows:

New technologies should be introduced into the curriculum to stimulate more interest in learning.

Other arts courses and subjects of interest to students should be developed using infographics.

Future research on the application of infographics to teaching should be combined with other teaching methods such as cognitive skills, systems thinking skills and critical thinking skills.

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