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Effect of Project-based Learning on Art Basic Sketching Ability of Second-Year Vocational Students in the Academic Year of 2023 of Chongqing University of Arts and Engineering

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Abstract

Background and aim: This study adopted the teaching mode of project-based learning to change the traditional art education teaching methods to improve the art basic sketching ability of secondary vocational students. The purpose of this study was 1) to compare the students' art basic sketching ability before and after learning through the project-based learning method, 2) to compare the students' art basic sketching ability after learning through the project-based learning method with the criterion set at 70% and 3) to assess the students' satisfaction after learning through the project-based learning method.

Materials and methods: In this experimental study, 40 secondary vocational students from Class 1 in the academic year of 2023, Chongqing University of Arts and Engineering were investigated. This study used an art basic sketching ability evaluation form to evaluate the students' art basic sketching ability before and after learning. Data were collected and analyzed by using arithmetic mean, standard deviation, and t-test for independent samples, and t-test for one sample.

Results: It was found that the 1) students' art basic sketching ability scores after learning through the project-based learning method (M = 82.030, S.D.=5.609) was higher than before learning through the project-based learning method (M = 64.980, S.D.=7.084) at .05 statistically significant level ($t_{39}=11.934$ $p<0.05$). 2) students' art basic sketching ability after learning through the project-based learning method was statistically higher than the determined criterion of 70% at a .05 level of statistical significance ($t_{39}=13.559$, $p<0.05$). 3) students' satisfaction with the using project-based Learning method in the fundamentals of art sketching course was at the highest level (M = 4.729, S.D.=0.447).

Conclusion: The project-based learning method has a significant effect on improving the art basic sketching ability of secondary vocational students.

Keywords: Art Basic Sketching Ability; Project-based Learning Method; Satisfaction

Introduction

There are many problems in the practical teaching of art courses. For example, the existing teaching model is relatively simple and passive. Teachers often instill textbooks or their own opinions in the classroom, causing students to give up their own thinking and blindly listen to the teacher's point of view (Gao, 2016; Li, 2021). This not only fails to highlight the dominant position of students in the classroom, but also affects the effective development of students' communication, cooperation, critical thinking, and especially creativity to a large extent, since creativity is vital in art courses. To illustrate briefly, teachers often use traditional teaching methods such as demonstration methods and practice methods when explaining other related content of sketching courses, which leads to the passive learning of the students and failure to apply the taught information to practices (Wu, 2013; Zhang, 2021). Therefore, their performance in the previous learning stage was not very good, which leads to the main teaching problem of the insufficient art basic sketching ability. However, art's basic sketching ability is the basis of Shaping, which is one of the crucial foundations for students' future development in art fields (Gao, 2016; Li, 2021; Wu, 2013; Zhang, 2021). Therefore, research on Art Basic Sketching instructions is the most crucial part for art teachers to effectively carry out instructions in secondary vocational institutions (Gao, 2016; Zhang, 2013; Zhang, 2021).

From this point of view, there is a new type of teaching method that could be more appropriate to apply to students with such characteristics, which is the Project-Based Learning method. PBL allows the student to apply the knowledge gathered in the classroom to real-world problems and requires the students to actively participate in projects that require sustained engagement and collaboration (Huang and Shideler, 2021). Under the application of project-based learning, the student's learning outcomes

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and abilities such as communication, cooperation, critical thinking, and especially creativity will be improved, since it changes the traditional instructional systems and passive learning activities that restrain the development of creativity (Heba, B.I., Abdullah, K., 2021). Most importantly, it enables the integration of knowledge from different disciplines and can bridge theory and practice (Helle et al., 2006), which could possibly solve the problems that occur in the art basic sketching course and improve the student's art basic sketching ability.

Compared to traditional methods, project-based learning has several benefits. (Chen and Yang, 2019): 1) It provides the students with the opportunity to freely express opinions, raise questions, and participate in discussions with other classmates. 2) It gives the students the feeling of influencing the learning process of the course by themselves. 3) It gives the students the feeling that their work can be applied in real practice and contribute to the team's work. And related to Hawari1& Noor (2020), conducted research on a topic of a project-based learning pedagogical design in STEAM of art education. The samples were selected from a primary school in Kuala Lumpur, which involved 2 art teachers and 48 students from a year 3 class and a year 4 class. This research utilized interviews, classroom observations, and document analysis methods. The research finding indicated that project-based learning helps teachers evaluate and provide teaching feedback, to improve the quality of art education courses. The results of this research can help educators evaluate the effectiveness of this method, thus proving the success of teaching practice because it provides necessary input for curriculum developers and scholars to evaluate the effectiveness of project-based learning as one of the teaching strategies in various education fields, mainly schools and higher education institutions. Moreover, Cheng (2009), applies the project-based learning method in the structure sketch course. The design of the teaching process was divided into five parts: 1) determine the learning task 2) try to complete the learning task 3) raise the questions 4) review, understand, and remember the theoretical knowledge 5) come back to the learning task itself. After students understand the correct painting steps and performance methods. It found that students have mastered the ability of autonomous learning, and the teaching also has achieved the desired results. At the end of the research, he concluded that there are two key points to which the instructor should pay attention, which were: 1) The determination of the learning task, since the basic idea of project-based teaching is to attach knowledge to tasks and let students acquire knowledge in the process of completing the tasks. And 2) The raising of questions, since the important link between tasks and knowledge is practical problems. Therefore, to effectively adopt the project-Based Learning method, practical problems must be formulated.

In summary, the current teaching of the Art Basic Sketching course requires the improvement of students' application of theoretical knowledge to practice, students' active participation in the learning process, and their art basic sketching ability, which matches the benefits that Project-Based Learning can bring. Therefore, the researcher chose to apply the Project-Based Learning method to the Art Basic Sketching Course of secondary vocational students to investigate the effect of Project-Based Learning on the Art Basic Sketching Ability of secondary vocational students.

Research Question

1) How does the art basic sketching ability of secondary vocational students in the academic year of 2023 of Chongqing University of Arts and Engineering before and after learning through the project-based learning method?

2) How does the art basic sketching ability of secondary vocational students in the academic year of 2023 of Chongqing University of Arts and Engineering after learning through the project-based learning method compare with the criterion set at 70%?

3) How does the satisfaction of secondary vocational students in the academic year of 2023 Chongqing University of Arts and Engineering after learning through the project-based learning method?

Research Objective

1) To compare the art basic sketching ability of secondary vocational students in the academic year of 2023 of Chongqing University of Arts and Engineering before and after learning through the Project-Based Learning method.

2) To compare the art basic sketching ability of secondary vocational students in the academic year of 2023 of Chongqing University of Arts and Engineering after learning through the project-based learning method with a criterion set at 70%.

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3) To assess the satisfaction of secondary vocational students in the academic year of 2023 of Chongqing University of Arts and Engineering after learning through the project-based learning method.

Literature Review

Project-based Learning

In this study, the project-based learning method was synthesized based on reviewing Nuntasukon & Yuthong's (2014), Hawari, A.D.M., & Noor, A.I. M's (2020), Hussein, B.'s (2021), Xiao Yu's (2017), and Luo Meng's (2020) teaching steps of Project-based learning as follows:

Table 1 The synthesis of the step of teaching by using Project-Based Learning on arts basic sketching ability

Nuntasukon & Yuthong (2014)	Hawari, A.D.M., & Noor, A.I.M (2020)	Hussein, B. (2021)	Xiao Yu (2017)	Luo Meng (2020)	PBL teaching process for this research/Result of the synthesis
Step 1 Preparation	Step 1 Essential	Step 1 Initiation	Step 1 Identify the project and make a full planning	Step 1 Determine the project topic	Step 1 Preparation
Step 2 Topic definition and selection	Step 2 Plan	Step 2 Planning	Step 2 Distribute projects and design tasks	Step 2 Implement the project plan	Step 2 Planning
Step 3 Project Layout	Step 3 Schedule	Step 3 Execution	Step 3 Complete the project and show the results	Step 3 Evaluation and reflection	Step 3 Implementation
Step 4 Project implementation	Step 4 Monitor	Step 4 Product delivery			Step 4 Presentation
Step 5 Presentation	Step 5 Assess	Step 5 Peer reviews			Step 5 Evaluation and Reflection
Step 6 Evaluation	Step 6 Evaluate	Step 6 Documentation and closeout			

Therefore, there are five steps in the project-based learning process based on the above information: Step 1 Preparation, Step 2 Planning, Step 3 Implementation, Step 4 Presentation, Step 5 Evaluation and Reflection. To be more specific:

1) Step 1 Preparation

The determination of project tasks is the preparation process for project teaching and the prerequisite for the implementation of the project-based learning method. Teachers usually design project tasks based on the teaching content and the training requirements of professional knowledge and professional ability. At the same time, teachers should impart basic theoretical knowledge about the project, help students understand the project requirements through full discussion with students, and then determine specific points and final objectives.

2) Step 2 Planning

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The development of the project plan should focus on students. To ensure the feasibility of the project plan, students are usually divided into groups to discuss independently the resource conditions and feasible ways to achieve the project implementation objectives, and further demonstrate them to ensure the feasibility of the project plan. Students should start to formulate the project plan, determine the project workflow, and make records during the implementation process; At the same time, it is necessary to strengthen the communication inside and outside the group and with the instructors to further ensure the practicality and feasibility of the project plan.

3) Step 3 Implementation

After determining the project plan and process, students will carry out the project implementation in an orderly manner through their planning steps and processes, and in the way of combining their division of labor and unity and cooperation. In the process of project implementation, there will inevitably be various problems that have not been encountered. Students should give full play to their imagination and creativity, actively face difficulties, and find effective ways to solve problems. At the same time, we should strengthen communication with classmates and instructors to ensure the successful implementation of the project.

4) Step 4 Presentation

The students should summarize the project together after the implementation of the project, after which the students should show their project results in this step to exchange knowledge between different groups.

5) Step 5 Evaluation and Reflection

Project assessment is an important process in the Project-Based Learning method. After the implementation and presentation of the project, the instructor will first check and assess the project results, summarize and give corresponding suggestions, and then the groups will evaluate each other. This process focuses on the communication between students, student groups, students, and instructors, and evaluates the problems and solutions encountered in the project implementation process through communication and discussion. After the evaluation, students in each group should reflect on themselves by sorting out, summarizing, and self-evaluating their work based on their own opinions and opinions acquired previously. Through this, specific suggestions may be put forward for future improvement.

Art Basic Sketching Ability

Art Basic Sketching training trains students to master the common laws of sketching and lay a solid foundation for sketching. In all plastic arts, the basics of sketching are of irreplaceable importance (Zhang, 2021). The teaching of art basic sketching trains students to master the common laws of sketching and lay a solid foundation for sketching (Gao, 2016). In all plastic arts, the basics of sketching have irreplaceable importance, and the importance of basics of sketching should not be underestimated and underestimated in art education. Some students learn sketching late, and it is impossible to solve all problems in a limited time, but art is always developing. As the most basic learning of painting, it cannot be ignored, and it is not allowed to be ignored.

Art Basic sketching ability and design sketching ability are both important components of basic art teaching. Art Basic sketching course (also known as conventional sketching course), as a basic course in painting art, focuses on texture, light and shade, sense of space, virtual and real handling, and so on, which studies the basic laws of modeling, and the main purpose of pictures is visual art effect (Chen, 2013). Design sketching (also called structural sketching) focuses on proportions, perspective laws, three-dimensional space concepts, and internal structure analysis of shapes. It trains the ability to draw design preconceived plans and is a professional basic course for expressing design intentions, which applies to all three-dimensional design professions (such as product design, modeling, sculpture, etc.), and the main purpose of the picture is the accuracy of perspective and structural analysis (Wang & Chen, 2017).

According to scholars such as Cao (2003), Zhou (2009), Chen (2013), Zhang (2013), Wu (2013), and Zhang (2021), there are five components of art basic sketching ability: the shape of the object, the structure of the object, the proportion of the object, the perspective of the object, and the light and dark relationship between objects, which were used to construct the art basic sketching ability evaluation form to measure the students' art basic sketching ability.

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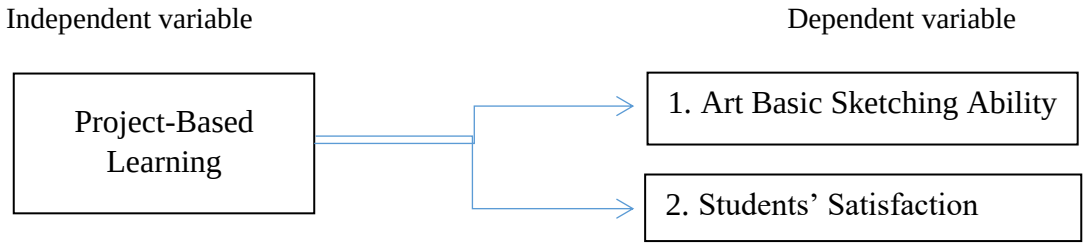
Conceptual Framework



Research Methodology

Population and Sample: The population of this study was 120 secondary vocational students in the academic year of 2023 at Chongqing University of Arts and Engineering. The sample of this study was 40 secondary vocational students from Class 1 in the academic year of 2023, Chongqing University of Arts and Engineering, which were derived from cluster random sampling method.

Experimental Design:

This study used one group post-test design shown in the below figure：

O1	X	O2

O1 was the measurement of the Art Basic Sketching Ability before its experiment.
X was learning management using a project-based learning method.
O2 was the measurement of the Art Basic Sketching Ability and satisfaction after its experiment.

Research Instruments: Research instruments were the tools for researching to collect data. The research instruments which were used in this study were:

1. Instruments for Experiment

Lesson plan: There were five lesson plans allocated with 10 hours of training in Art Basic Sketching Ability. According to the expert evaluation form, it was found that the mean scores of appropriateness were at 4.8 and the standard deviation was at 0.41, which means the lesson plans had quality at a very high level.

2. Instruments for Collecting Data

2.1 The instrument for measuring the art basic sketching ability was the Art Basic Sketching Ability evaluation form. It was found that the Index of Item-objective congruence of each item was 1.00, which means the evaluation form had validity. Each item of the Art Basic Sketching Ability was analyzed to find out the reliability of the evaluation form by using Pearson's Product-moment Correlation to show inter-rater correlation, in which the result of inter-rater correlation was 0.95. Therefore, the test was proved appropriate for collecting data.

2.2 Questionnaire for students' satisfaction toward project-based learning.

It was found that the Index of Item-objective congruence of each item was 1.00. that means the questionnaire had validity. The reliability coefficient value was 0.96, greater than 0.9. Therefore, the reliability coefficient value indicates that the reliability quality of the study data was very high. So, the questionnaire was appropriate for collecting data.

Data Collection: Data collection on the Art Basic Sketching Ability under the instruction of learning management using project-based learning were as follows:

1) The samples were pretested for Art Basic Sketching Ability before teaching according to the lesson plans.

2) The samples were taught according to the lesson plans constructed based on the learning management using Project-Based Learning in the classroom.

3) After being taught for 10 hours according to the lesson plans, the samples were post-tested for their Art Basic Sketching Ability by using the Art Basic Sketching Ability evaluation form.

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4) The students were given the students' satisfaction with the learning management using a project-based learning questionnaire.

Data Analysis: In this study, the quantitative data were analyzed by using the statistical program according to the research objectives.

1) Compare the students' art basic sketching ability before and after learning through the learning management using project-based learning using a t-test for dependent samples.

2) Compare the students' art basic sketching ability after learning through learning management using project-based learning with the criterion set at 70% using a t-test for one sample.

3) Assess the students' satisfaction after learning through learning management using a project-based learning method by using arithmetic mean and standard deviation.

Research Results

According to the research objectives, the results were as follows:

1. Result of comparing the students' art basic sketching ability before and after learning through the project-based learning method by using a t-test for dependent sample analysis.

Table 2 The comparison of the students' art basic sketching ability before and after learning through the project-based learning method

Group	n	Pretest		Posttest		t	p
		M	S.D.	M	S.D.		
Experimental Group	40	64.980	7.084	82.030	5.609	11.934*	.000

From the results of t-test for dependent sample analysis in Table 2, it could be seen that the students' art basic sketching ability scores after learning through the project-based learning method (post-test scores) M = 82.030 S.D.=5.609 was higher than the students' art basic sketching ability scores before learning through the project-based learning method (pre-test scores) M = 64.980 S.D.=7.084 at .05 statistically significant level (t 39=11.934, p <0.05). This indicated that the student's art basic sketching ability was improved after learning through project-based learning.

2. The result of comparing the students' art basic sketching ability after learning through the project-based learning method with a criterion set at 70% by using a t-test for one sample analysis.

Table 3 The comparison of the students' art basic sketching ability after learning through the project-based learning method with the criterion set at 70%

Group	n	Full Score	Criteria Score	M	S.D.	t	p
Experimental Group	40	100	70	82.025	5.609	13.559*	.000

From the results of the t-test for one sample analysis in Table 3, it could be seen that the students' art basic sketching ability after learning through the project-based learning method was M = 82.025 S.D.=5.609, which was statistically higher than the determined criterion of 70% at .05 level of statistical significance (t 39=13.559, p <0.05). This indicated that the students' art basic sketching ability after learning through project-based learning can pass the standard criterion of 70%.

3. The result of assessing the students' satisfaction after learning through the project-based learning method by using arithmetic mean and standard deviation analysis.

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Table 4 The specific results of the students' satisfaction after learning through the project-based learning method (n= 40)

Dimension of students' satisfaction	Mean	S.D.	Levels of Satisfaction
1) Satisfaction toward Content	4.663	0.476	Highest
2) Satisfaction with the Project-based learning method	4.717	0.456	Highest
3) Satisfaction toward learning activities	4.725	0.452	Highest
4) Satisfaction with the learning atmosphere	4.765	0.431	Highest
5) Satisfaction with learning materials	4.777	0.422	Highest
6) Satisfaction toward measurement and evaluation	4.758	0.430	Highest
Overall students' satisfaction	**4.729**	**0.447**	**Highest**

From the results of the arithmetic mean and standard deviation analysis in Table 4, it could be seen that the student's satisfaction with the course content was M = 4.663, S.D. 0.476. The students' satisfaction with the project-based Learning method was M = 4.717, S.D.=0.456. The students' satisfaction towards the learning activities was M = 4.725, S.D.= 0.452. The students' satisfaction with the learning atmosphere was M = 4.765, S.D.0.431. The students' satisfaction with the learning materials was M = 4.777, S.D.= 0.422. The students' satisfaction towards the measurement and evaluation was M = 4.758, S.D.=0.430. The overall of students' satisfaction of students' satisfaction after learning through the project-based learning method was M = 4.729, S.D.=0.447. It could be concluded that the student's satisfaction with the use of the project-based Learning method in the Fundamental of Art Sketching course was at the highest level, and the students were quite satisfied with the Project-based learning on art basic sketching course.

Conclusion

In conclusion, through the analysis of arithmetic mean, standard deviation, t-test for independent sample, and t-test for one sample on the art basic sketching ability of the secondary vocational students in Chongqing University of Arts and Engineering before and after learning through the Project-based learning method, it was revealed in Diagram 1 and 2 that the students' art basic sketching ability has been significantly improved after learning. Moreover, the students' satisfaction with project-based learning was at the highest level. Therefore, it was feasible to apply project-based learning in the art basic sketching course, which is beneficial for improving the art basic sketching ability of the secondary vocational students at Chongqing University of Arts and Engineering.

Discussion

Discussion of research objectives 1 and 2: the students' art basic sketching ability was able to be cultivated through the project-based learning method. This result may be due to the effect of the five steps of project-based learning on the student's learning process:

The research results showed that the students' art basic sketching ability scores after learning through the project-based learning method (post-test) M = 82.030 S.D.=5.609 was higher than the students' art basic sketching ability scores before learning through the project-based learning method (pre-test) M = 64.980 S.D.=7.084 at .05 statistically significant level (t 39=11.934 p <0.05). Moreover, after learning through the project-based learning method was M = 82.025 S.D.=5.609, which was statistically higher than the determined criterion of 70% at the .05 level of statistical significance.

These two results show that the students' art basic sketching ability was able to be cultivated through the project-based learning method. These results may be due to the effect of the five steps of project-based learning on the student's learning process:

1) Step 1 Preparation: The project was designed by the teachers based on a real-world practical problem (in the case of popular anime) related to the Art Basic Sketching Course teaching content and the training requirements of professional knowledge and professional ability, which meets Thomas's (2000) and Blumenfeld et al.'s (1991) perspectives of an effective PBL should be organized around driving questions that lead students to encounter central concepts or principles and it should be focused on authentic, real-world problems.

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2) Step 2 Planning: The planning of the project was student-centered, which means that the project plan should be constructed by the students. To be more specific, the development of the project plan should focus on students, since Hawari, A.D.M., & Noor, A.I.M (2020) and Hussein, B. (2021) believe that the content should be selected with the involvement of the students' development and submission of a detailed plan for the project. This benefit corresponded with Thomas's (2000) opinion that an effective PBL should be student-driven and managed.

3) Step 3 Implementation: A. the freedom provided by the teachers, which corresponded with Xiao Yu's (2017) belief that teachers should not give too much guidance to students. B. The integration of knowledge and skills while exchanging experience and discovering new knowledge during the implementation process (Nuntasukon & Yuthong, 2014). To be more specific, during the implementation process, Huang and Shideler (2021) believe that the students were able to integrate their theoretical knowledge with real problems and tackle the responsible tasks, which corresponded with Helle et al., (2006) point: one of the abilities that PBL has is to bridge theory and practice.

4) Step 4 Presentation: There was a product of project coming out of each lesson, which is also an indicator that represents the students' comprehension of knowledge, which facilitated the students' improvement of Art Basic Sketching Ability since it was the learning outcome of their efforts and learning activities that often used to address the driving question (Blumenfeld et al., 1991).

5) Step 5 Evaluation and Reflection: In this step, it was beneficial for the students to grasp their understanding level regarding the knowledge that needs to be acquired and the part that needs to be improved (Hawari, A.D.M., & Noor, A.I.M, 2020). In addition to the student aspect, the assessment information could also be used to improve the teachers' instruction efficiency (Hawari, A.D.M., & Noor, A.I.M, 2020).

In addition, the students' self-reflection was also beneficial, since it provided the students with the opportunity to freely express opinions, raise questions, and participate in discussions with other classmates (Chen and Yang, 2019) during the self-reflection process. This could be discussed from two aspects: A. Peer reflections. Each group was asked to peer assess the final product developed by a different group (Hussein, B., 2021) to learn from other's strong points to offset their weaknesses. B. Group reflections. Students in each group first reflected themselves by sorting out, summarizing, and self-evaluating their work based on their own opinions and opinions acquired previously, through which the advantages and disadvantages of the project process were discussed and specific suggestions generated were put forward for future improvement (Luo Meng, 2020).

Discussion of research objective 3: The students' satisfaction was able to be cultivated through the project-based learning method.

The students' satisfaction towards the course content was M = 4.663, S.D. 0.476. The students' satisfaction with the project-based Learning method was M = 4.717, S.D.=0.456. The students' satisfaction towards the learning activities was M = 4.725, S.D.= 0.452. The students' satisfaction with the learning atmosphere was M = 4.765, S.D.0.431. The students' satisfaction with the learning materials was M = 4.777, S.D.= 0.422. The students' satisfaction towards the measurement and evaluation was M = 4.758, S.D.=0.430. It could be concluded that the student's satisfaction with the use of the project-based Learning method in the Fundamental of Art Sketching course was at the highest level, and the students were quite satisfied with the Project-based learning on art basic sketching course.

These results show that the students' satisfaction was able to be cultivated through the project-based learning method, which may also be due to the effect of the five steps of the PBL method on the student's learning process: 1) content and learning materials, 2) project-based learning and learning activities, 3) learning atmosphere, 4) measurement and evaluation. To summarize, due to Project-based learning characteristics such as student-centered, student-managed, and selection of real-world projects (Hawari, A.D.M., & Noor, A.I.M, 2020; Hussein, B., 2021; Thomas, 2000), the students were motivated to learn and complete the responsible tasks. This point corresponded with several scholars' findings such as Chen and Yang's (2019) opinion that a student-centered/student-managed project planning process could be more motivating since it gives the students the feeling of influencing the learning process of the course by themselves.

Recommendation

Recommendation for Implication: Based on the findings of this research, it could be seen that the Project-based Learning method could be of great help to other art courses besides the Art Basic Sketching course. However, there are still several points during implementation that need to be taken

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into consideration to better enhance the effectiveness of Problem-based learning, which will be discussed according to its teaching steps as follows:

1) Step 1 Preparation, the problem that determines the project task should be based on real-world practical issues related to the course content since it has been proved that the PBL which is embedded in the curriculum and focused on authentic, real-world problems more effective (Thomas, 2000). To be more specific, the learning materials selected should be popular and in trend of the time, which can arouse students' interests and motivation to learn, such as the popular anime in this case. Moreover, it would be more effective if the learning direction and objective were specific and clear to the students.

2) Step 2 Planning, the design of the project plan should be student-centered and student-managed (Hawari, A.D.M., & Noor, A.I.M, 2020; Hussein, B., 2021; Thomas, 2000), which can not only enhance the effectiveness of the instruction, but also motivates the students to learn (Chen and Yang, 2019). The project plan should be detailed for the students to implement efficiently in the next step of implementation. The teacher could offer facilitation occasionally when the students encountered difficulties that obstruct their design process.

3) Step 3 Implementation, the teacher should not intervene much during the students' implementation of the project plan, which means that enough freedom should be offered for the students to perform their skills (Xiao Yu, 2017). Moreover, under this condition, the students could freely express their opinions and participate in group discussions (Chen and Yang, 2019), through which some unexpected results may happen. For instance, the student's communication skills, cooperation skills, critical thinking skills, and especially creativity might be improved (Heba, B.I., Abdullah, K., 2021).

4) Step 4 Presentation, limited time should be offered for the students to summarize the project and select a group representative to present their results, through which the students' communication skill and cooperation skills might be improved (Chen and Yang, 2019; Heba, B.I., Abdullah, K., 2021).

5) Step 5 Evaluation and Reflection, the student's communication skills, cooperation skills, critical thinking skills, and creativity should be the central point (Heba, B.I., Abdullah, K., 2021) since this step mainly involves evaluations and reflections through communication. Two aspects need to be noticed:

A. Teacher assessment: For students, the teacher should offer corresponding suggestions for the students after the presentation of their project results, for it is beneficial for them to grasp their understanding level regarding the knowledge and the part that needs to be improved (Hawari, A.D.M., & Noor, A.I.M, 2020). For teachers, the assessment information should be documented to improve the teachers' instruction efficiency (Hawari, A.D.M., & Noor, A.I.M, 2020).

B. Student reflection: For peer reflections, students should document the advantages and disadvantages of other groups' projects to learn from other's strong points to offset their weaknesses and improve themselves. For group reflections, enough time should be offered for the students to self-evaluate their work based on their own opinions as well as opinions from peer reflections. Combining these opinions, specific improvement suggestions for their project process should be generated by themselves (Luo Meng, 2020).

Recommendation for Further Research: The main direction of this research is to determine the Effect of Project-Based Learning on the Art Basic Sketching Ability of Secondary Vocational Students, which is general research on Project-based learning. Therefore, several points could be considered for further research:

1) Specific research on each step of the Project-based Learning method could be done for more deep understanding and applications.

2) Since this research was carried out on the Art Basic Sketching Ability of the Art Basic Sketching course, more research on other art-related abilities/non-art related abilities/21st-century skills and various courses could be done to determine the effectiveness of PBL in all fields.

3) Since this research was carried out on the Art Basic Sketching Ability of the students as a whole, specific research on each component of the Art Basic Sketching Ability could be explored.

4) Since this research was to determine the effectiveness of Project-based Learning on Art Basic Sketching Ability, perhaps more research on students' academic performance in art or non-art-related courses could be done.

5) Since this research was carried out on the grade level of secondary vocational students, more research on all grade levels should be done to determine the feasibility and effectiveness of PBL on all ages.

This research was mainly carried out offline, perhaps other teaching models such as Blended Learning or Flipped Classroom could be applied in combination with Project-based Learning to determine the efficacy of instruction on art-related courses and various courses.

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