



## Using Constructivism Theory to Improve Sculpture Creation Ability for Undergraduates

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### Abstract

The objectives of this research were to 1) study the factors that improve sculpture creation ability for undergraduates and 2) examine the effects of implementing constructivism theory. The sample group consisted of 30 undergraduates at Inner Mongolia Minzu University in China. They were selected through cluster random sampling. The research instruments were 1) three lesson plans using constructivism theory, totaling 12 hours, and 2) sculpture creation ability. Data were analyzed using frequency, percentage, interpretation, mean, and standard deviation for confirmation of the instructional model. The main findings showed that the students' sculpture creation ability was significantly improved. Furthermore, after implementing constructivism theory, all students who enrolled in the sculpture course were at a good level. As a result, it could be concluded that the constructivism theory was successful in enhancing undergraduates' sculpture creation abilities.

**Keywords:** Constructivism Theory, Sculpture Creation Ability, Undergraduates

### Introduction

With the continuous growth of China's economy, the scale of cities continues to expand. People's demand for spirit has been increasing, and art education has ushered in a fresh spring, and sculpture education has also flourished. The demand for sculpture in society is increasing, and numerous comprehensive universities have also begun to offer the major related to sculpture. More sculpture graduates have entered the fields of art, decoration, urban planning, etc.

The Ministry of Education (2018) issued the Opinion for the Ministry of Education on Strengthening the Construction of High-level Undergraduate Education and Improving the Ability of Talent Cultivation in an All-round Way, which pointed out that universities



promoted classroom teaching revolution, took student development as the center, enhanced learning revolution through teaching reform, selected classroom teaching methods according to class conditions, and continually improved the quality of classroom teaching. Teachers actively guided students to self-manage, stimulated the desire for knowledge, improved learning efficiency and the ability of independent learning (The Ministry of Education, 2018).

According to the statistics from 2010 to 2023 for the employment destination of graduates in the university that author has been working, 44.1% of the graduates have chosen art teachers in primary and secondary schools as their careers, 38.7% of the graduates have engaged in other professions unrelated to sculpture, and only 17.2% of the graduates have engaged in the professions related to sculpture. It can be seen that if teachers cultivate sculpture professionals who could better meet the needs of society, university courses should pay more attention to the self-learning ability and creative ability for learners.

There is also a lot of domestic research in this field. Han (2023) pointed out that in the traditional structure of art education, the core of education was focused on the transmission of knowledge as the primary goal. With the development of the times, the concept of education has changed, from emphasizing students' mastery of basic knowledge in the past to focusing more on students' creativity and aesthetic interests, which required a new teaching approach in the art classroom. Zhao (2022) proposed that in order to maximize the role and value of constructivism art teaching, as well as to improve the overall quality of art teaching, this paper provided an in-depth analysis of the formation of the constructivism art teaching model and pointed out the key principles that should be followed when designing this teaching model such as the principle of simplicity, the principle of gamification, the principle of appropriateness, the principle of authenticity and the principle of three-dimensional evaluation. Based on this, the constructing art classroom teaching model was proposed, and the application of the method was studied in terms of constructing harmonious teacher-student relationships. In the actual teaching process, teachers should create a relaxing learning environment in order to stimulate students' enthusiasm for learning; master the key and difficult points during the art course in order to enhance the practicality of students in the learning process; and use a variety of assessment means to ensure that students' learning results meet expectations. Cao (2021) proposed that the pedagogical philosophy of constructivism emphasized the enhancement of teacher-student collaboration in the educational process, aiming to nurture students' independent exploratory skills in art learning and to guide them more effectively in forming new perceptions based on what they already know. In art education research, the focus of constructivism has centered on a number of areas,



such as educational approaches to meaning construction, the philosophy of constructivism, social and cultural perspectives, and theoretical learning and practical application. In the focus areas of research, there were four main directions of development: the emphasis on constructivist teaching improvement and the importance of color teaching; the increasing attention to the cultivation of students' social and cultural concepts in art education; the higher importance given to the teaching method of constructing meaning in art education; the increasing professionalization of art teachers, the constant updating of educational concepts, and the diversification of teaching methods, and so on. In the teaching process of art, the importance of interaction has been gradually recognized. Hu (2021) proposed that interdisciplinary teaching methods had become a trend in the modern educational research. As an indispensable part of quality education in schools, art education was not only conducive to improving students' and creativity, but also helps to enhance their sense of social responsibility. Art education and labor education were complementary to each other, for integrating labor education into art education helped students grow in all aspects. As comprehensive art discipline, the main contents of art included aesthetic knowledge, skills and techniques, emotional attitude and values, etc.

The practice of the above research showed that integrating constructivism method into teaching reform could enhance students' learning interest, thus mobilizing students' learning initiative and helping students to master corresponding knowledge points. These practices also showed that teaching reform based on constructivism could improve students' inquiry ability and cooperation ability. In a word, the researchers applied the task-driven teaching method to the teaching practice during the sculpture course, and achieved favorable teaching results, to provide students with independent learning and practice opportunities to enhance students' creativity. However, the task-driven teaching model was not static. It would continue to improve with the development of society and the renewal of culture. Teacher should try their best to learn educational theory and professional knowledge, improve teaching ability and master more teaching skills.

## Objectives

1. To study the factors that improve sculpture creation ability for undergraduates.
2. To examine the effects of implementing constructivism theory.

## Concept theory framework

This study about “Using Constructivism Theory to Improve the Sculpture Creation Ability for Undergraduates”, the researcher studied the concepts and principles of constructivism theory, analyzed the method of constructivism theory and introduced the



research framework 5 steps: 1) Construct knowledge, 2) Stimulate interests and curiosity, 3) Provide appropriate learning opportunities, 4) Encourage learners' participation, 5) Emphasize the relative and subjective of knowledge. The evaluation criterion consisted of three aspects. The items were as follow:

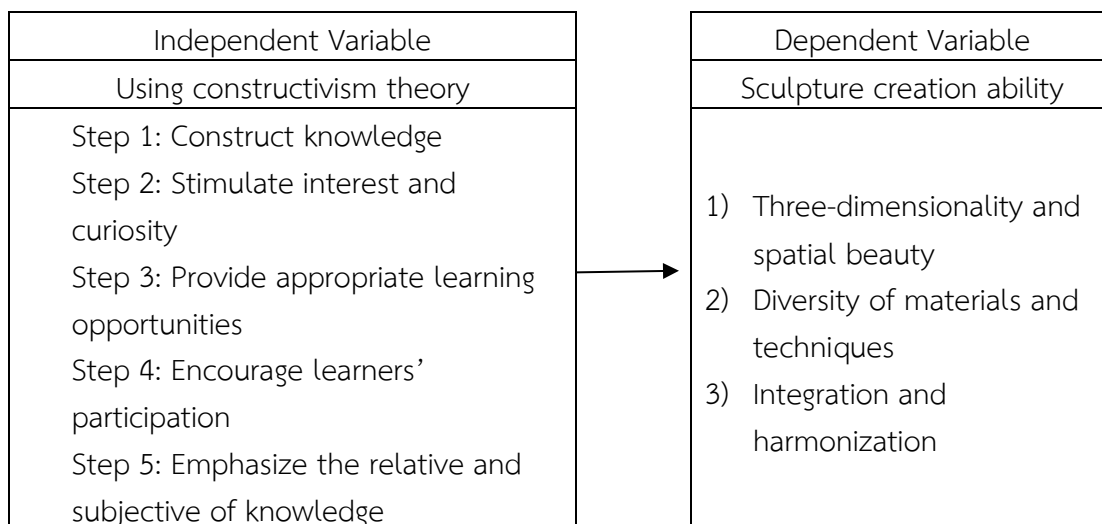


Figure 1: Research framework

## Teaching methods

The researcher developed constructivism teaching steps and evaluation factors affecting sculpture creation ability. Teachers applied the teaching mode based on constructivism theory to university sculpture professional courses. This study focused solely on the creative skills training for third-grade sculpture majors. The course was divided into three lesson plans, every plan consisted of 5 steps, totaling 12 hours.

### Lesson Plan 1

#### Objectives

Students have the knowledge and abilities related to expressing ideas through clay works: 1. Three-dimensionality and spatial beauty. 2. Diversity of materials and techniques. 3. Integration and harmonization.

#### Instructional media

1. China higher education press textbooks and PowerPoint
2. Open online courses
3. Video on the web platform

#### Contents: Clay sculpture

Skill 1: Three-dimensionality and spatial beauty



The three-dimensional beauty of clay sculpture is reflected through modelling. Through the skillful use of the shaping properties of soil, the student transforms the flat imagination into a three-dimensional three-dimensionality form. This transformation of modelling not only makes the work more vivid and lifelike, but also enhances the viewer's perception and experience, making people feel as if they are in a real three-dimensional world.

In addition to three-dimensional beauty, clay sculptures also show the beauty of space. In the creation of clay sculptures, students need to use spatial thinking and composition skills to cleverly combine elements of different forms to form a harmonious and unified integrality. This spatial combination not only makes the work more hierarchical and three-dimensional, but also creates a sense of space and perspective. When the viewer appreciates the clay sculpture works, the spatial beauty of the works can be understood.

#### Skill 2: Diversity of materials and techniques

##### 1) Types of clay

Clay is the cornerstone of clay sculpture works, and it has a decisive influence on the final effect of the work. Common clays are as follows:

Ordinary clay: It is the most basic type of clay, easy to shape, suitable for beginners.

China clay: It is high fire resistance and shrinkage rate, suitable for high temperature firing, often used to make fine ceramic art.

Industrial clay: It is not dry easily after being shaped and is suitable for making large or complex structures.

##### 2) Diversity of techniques

Shaping tools: The diversity of shaping tools provides students with a wealth of creative means. The basic tools are knives, scrapers, rollers, etc., as well as more professional molds and engraving tools, which help students to create delicate details and complex forms.

Firing process: Firing is an important step in the production of clay works, and the process varies according to the type of clay and the needs of the work. From low temperature firing to high temperature sintering, each firing method affects the texture and color of the work.

Glazing technology: Glazing can add luster and protection to clay works. From traditional glazes to modern spray glazing techniques, glazing methods are varied, and different glazes and processes can be selected according to the needs of students.

#### Skill 3: Integration and harmonization

##### 1) Integration.

Shape design and conception: Shape is the most direct expression form of clay



sculpture works, and its design and conception have decisive significance for the success of the works. On the basis of in-depth understanding of clay characteristics and shaping techniques, students need to convey the theme and emotion of the work to the audience through clever shape design. At the same time, students also need to consider the coordination and unity between form and material to create harmonious and beautiful works.

**Structural stability analysis:** Clay works need to have a certain structural stability to ensure that they are not easily damaged during production and display. In the process of creation, students need to conduct in-depth analysis and research on the structure of the work, and take reasonable support and fixing measures to ensure the stability and security of the work. At the same time, the student also needs to consider the balance and coordination between structural stability and morphological design in order to create works that are both beautiful and practical.

## 2) Harmonization

The overall style is unified. The unity of the overall style is one of the important factors for the success of clay sculpture works. Students need to keep the overall style of the work consistent during the creation process to ensure coordination and harmony between various parts. Through the unified style expression, the overall sense and artistic appeal of the work can be enhanced, so that the audience can feel the theme and emotion conveyed by the work more deeply.

**Aesthetic and cultural integration.** As an art form, clay sculpture works need to carry and express specific aesthetic and cultural connotations. In the process of creation, students need to combine their personal aesthetic concepts with traditional culture to show their unique cultural charm through their works. Through the integration of aesthetics and culture, clay sculpture works can be endowed with deeper meaning and value, and enhance their influence and inheritance in contemporary society.

The lesson plan consisted of 5 teaching steps:

### Step 1: Construct knowledge

Individuals continuously constructed new knowledge by interacting with the environment and using their existing knowledge and experience. Individuals communicated, cooperated, and negotiated with each other to construct knowledge together.

### Step 2: Stimulate interest and curiosity

Teachers stimulated students' interest and curiosity and encouraged their active exploration and discovery of knowledge. Teachers created a challenging and encouraging environment that promoted interaction between students.



### Step 3: Provide appropriate learning opportunities

Teachers provided a variety of learning opportunities that were appropriate for teachers such as experimentation, observation, communication, and collaboration.

### Step 4: Encourage students' participation

Teachers encouraged learners to participate in the process of knowledge construction such as asking questions, sharing experiences, and providing feedback.

### Step 5: Emphasize the relative and subjective of knowledge

Teachers helped students understand the relative of knowledge and encouraged them to respect and accept different views and opinions. Teachers gave timely feedback on students' performance and progress, and continuously improved and refined their knowledge framework.

At last, the researcher submitted the revised lesson plans to 3 experts for review to assess the validity of factors that could enhance sculpture creation ability for undergraduates.

+1 = Sure that the contents are related to the topics

0 = Not sure that the contents are related to the topics

-1 = The contents are not related to the topics

**Table 1:** The assessment result and suggestion from experts

No.	Questions	Assessment			suggestion
		results			
		+1	0	- 1	
1	Its content is related to the learning objectives.				
2	Learning objectives and themes are aligned.				
3	The learning activities are related to the learning model of constructivism method.				
4	Assignment of work related to the topic of study.				
5	There are a variety of assessments related to learning objectives.				
6	Measurement and evaluation related to learning objectives.				





## Sculpture creation ability measurement form and criteria

1.1 Analyze the contents of sculpture creation ability consistent with the course arrangement.

1.2 Be familiar with theories and methods on sculpture creation ability through the research.

1.3 According to the dimensions of sculpture creation ability, the sculpture creation ability evaluation standard was planned. The scoring criteria and scores had been set up for 30 points in all. Different scores represented degrees.

Rank 1: 27-30 points represents strong;

Rank 2: 23-26 points represents relatively strong;

Rank 3: 18-22 represents general;

Rank 4: 14-17 represents relatively weak;

Rank 5: 10-13 represents weak.

1.4 Submit the designed evaluation criteria to the thesis supervisor, check their accuracy, and make modifications.

1.5 Submit sculpture creation ability assessment evaluation criteria created to three experts for measurement and inspection. Experts check the content validity and calculate the Index of Item Objective Congruence (IOC). The consistency indicator of each evaluation content is greater than or equal to 0.50 and is considered suitable for research. The IOC (Index of Item Objective Congruence) value for each item in this evaluation standard is 1.00.

1.6 Revise and improve the scoring criteria, then try out with students who were not the sample to ensure the quality of the assessment.

1.7 Check the reliability of measurement standards using Cronbach's  $\alpha$  Coefficients is 1.00., which can be used for research.





Table 2: The measurement form and criteria of sculpture creation ability

Evaluation items	Evaluation contents	Score and criterion		
		3	2	1
Three-dimensional and spatial beauty	1. Emphasis on contours and forms	Through the fine portrayal of the outline of the object, highlighting its morphological characteristics in space, making the sculpture image more distinctive and three-dimensional accurately.	By intricately depicting the object's contour, accentuating its spatial morphological features, the sculpture's image becomes moderately unique and three-dimensional.	By delicately depicting the object's contour, the spatial features of the object are rarely accentuated, making the sculpture's image less unique and stereo.
	2. Using of light and shadow effects	Through the rational use of light and shadow, it is the most possible to create a relationship between light and dark on the surface of the sculpture.	By strategically employing light and shadow, the student moderately forget a balance between brightness and shadow on the sculpture's surface.	By judiciously employing light and shadow, the student can't keep a balance between brightness and shadow on the sculpture's surface.



Table 2: (Continued)

Evaluation items	Evaluation contents	Score and criterion		
		3	2	1
Three-dimensionality and spatial beauty	3. Treatment of depth levels	By creating a hierarchical relationship between front and back, up and down in the sculpture, a sense of depth is accurately formed so that the audience can feel the three-dimensional spatial characteristics of the sculpture.	Establishing a tiered arrangement of the sculpture's front and back, as well as its top and bottom, students create moderately an impression of depth, enabling viewers to experience the sculpture's three-dimensional spatial features.	Establishing a tiered arrangement of the sculpture's front and back, as well as its top and bottom, students hardly create an impression of depth, enabling viewers to experience the sculpture's three-dimensional spatial features.
	4. Consideration of environmental factors	Sculpture should echo with the surrounding environment to form accurately a harmonious and unified integrity.	Sculptures ought to resonate with their environment to create moderately a cohesive and unified entity.	Sculptures barely resonate with their environment to create a cohesive and unified entity.



Table 2: (Continued)

Evaluation items	Evaluation contents	Score and criterion		
		3	2	1
Diversity of materials and techniques	1. Diversity of materials	Students accurately choose the right material according to the theme, style and function of the work.	Students moderately select appropriate materials based on the work's theme, style, and purpose.	Students barely select appropriate materials based on the work's theme, style, and purpose.
	2. Diversity of techniques	Students accurately use the traditional sculpture process, including carving, casting and forging, while the modern sculpture process incorporates more technological elements.	Students moderately use the traditional sculpture process, including carving, casting and forging, while the modern sculpture process incorporates more technological elements.	Students barely use the traditional sculpture process, including carving, casting and forging, while the modern sculpture process incorporates more technological elements.



Table 2: (Continued)

Evaluation items	Evaluation contents	Score and criterion		
		3	2	1
Integration and harmonization	1. Integration of elements	By organizing and arranging the elements, students accurately make the work more layered and three-dimensional, and improve the visual impact of the work.	Structuring and organizing components moderately enhance the work's complexity and three-dimensional nature, thereby boosting its visual appeal.	Structuring and organizing components barely enhance the work's complexity and three-dimensional nature, thereby boosting its visual appeal.
	2. Harmonization of materials	Different materials have different textures and expressive power, and students accurately choose appropriate materials according to the theme and aesthetic needs.	Students moderately select suitable materials based on their unique textures and expressive capabilities.	Students barely select suitable materials based on their unique textures and expressive capabilities.



Table 2: (Continued)

Evaluation items	Evaluation contents	Score and criterion		
		3	2	1
Integration and harmonization	3. Integration of processes	Students accurately combine the processes of carving, casting, forging, and 3D printing.	Students integrate moderately carving, casting, forging, and 3D printing techniques.	Students integrate barely carving, casting, forging, and 3D printing techniques.
	4. Harmonization of environmental factors	Students accurately consider the space, light, color and other environmental factors, so that the work and the environment complement each other and form a harmonious and unified integrity.	Students moderately take into account the spatial, lighting, color, and environmental elements surrounding their work.	Students barely take into account the spatial, lighting, color, and environmental elements surrounding their work.



## Results

The study used constructivism method to improve sculpture creation ability for undergraduates.

### **Part 1: To study the factors that improve sculpture creation ability for undergraduates.**

Firstly, internal factor. 1) Innovative thinking: Innovative thinking is the foundation of creation ability, which involves unique insights into problems and novel solutions. During the process of sculpture creation, innovative thinking can help students break through the shackles of traditional concepts and create works with unique beauty and artistic value. 2) Imagination ability: Sculpture creation requires students to have rich imagination ability to construct the form, structure and spatial relationship of sculpture through imagination. The ability of imagination can help students to explore more possibilities in their creation and make their works more personalized and innovative. 3) Practical ability: Practical ability is the key to translating innovative thinking and imagination into practical work. Students need to exercise their skills and techniques through continuous practice in order to better transform their ideas into sculptures with artistic beauty. 4) Observation ability: Observation ability is an important means for students to obtain creative inspiration. By observing things and phenomena around them, students can discover elements of beauty and sources of inspiration and incorporate them into their works. At the same time, the ability to observe can also help the students better understand and grasp the form and structure of the sculpture, so that the work is more accurate and vivid.

Secondly, external factor. 1) Education system: The education system plays a crucial role in cultivating the innovative ability of sculpture. Excellent art education can provide students with rich knowledge and skills so as to stimulate their creative potential. However, if the education system pays too much attention to the teaching of traditional skills and theories, while ignoring the cultivation of students' personality and creativity, then this education may limit students' innovative sculpture ability. 2) Development of science and technology: The development of science and technology has also had an important impact on sculpture creation. For example, the emergence of new materials and technologies provides students with more creative means and ways of expression. At the same time, the popularity of digital technology has also made the process of sculpture creation more convenient and efficient. However, relying too much on science and technology may cause students to lose their deep understanding and mastery of traditional techniques, thus affecting their innovative ability. 3) Market demand: Market demand also has a certain impact on sculpture creation. If the market demand is too focused on commercialization and practicality, students may be forced to abandon their



artistic pursuit and innovative spirit to meet the needs of the market. However, if market demand and individual artistic pursuits can be balanced, then market demand may also become an important driving force for sculpture innovation.

**Part 2: To examine the effects of implementing constructivism theory.**

In this section, the researcher aimed to evaluate the effectiveness of constructivism theory during the process of teaching sculpture professional courses. This study focused solely on the creative skills training of third-grade undergraduates majoring in sculpture. The course was divided into three units, totaling 12 hours:

The researcher compared 30 students' sculpture creation ability before and after the implementation of constructivism theory. The teaching effectiveness of the instructional course was analyzed as follows. 1) study the factors to improve sculpture creation ability for undergraduates, and 2) examine the effects of implementing the constructivism theory. The sample group consisted of 30 undergraduates, at Inner Mongolia Minzu University in China, who were selected through the cluster random sampling. In the research, 30 juniors were selected as experimental subjects in the study, including 10 male students (33.33%), and 20 female students (66.66%). The evaluation standard of sculpture creation ability consisted of 10 evaluation items. Each evaluation item is worth 1-3 points, totaling 30 points.

The researcher conducted data analysis by using the mean, standard deviation, and dependent t-test based on the students' sculpture creation ability scores before and after the implementation of constructivism theory. The results of the data analysis were presented in Table 3.





**Table 3:** Scores on sculpture creation ability before and after the implementation of constructivism theory

Number of students	Before class score (Pretest)	After class score (Posttest)	Differences between scores (D)
1	20	25	5
2	25	28	3
3	26	28	2
4	24	24	0
5	27	30	3
6	24	28	4
7	23	27	4
8	25	28	3
9	26	26	0
10	22	27	5
11	26	29	3
12	29	30	1
13	19	22	3
14	22	28	6
15	25	27	2
16	16	20	4
17	27	28	1
18	25	29	4
19	26	24	-2
20	30	30	0
21	20	23	3
22	22	27	5
23	26	29	3
24	27	24	-3
25	26	26	0



Table 3: (Continued)

Number of students	Before class score (Pretest)	After class score (Posttest)	Differences between scores (D)
26	22	26	4
27	26	29	3
28	27	24	-3
29	27	22	-5
30	24	24	0
Average score			
$\bar{X}$	24.47	26.40	1.93
SD	3.048	2.660	2.677

As can be seen in Table 3, through the application of teaching theory based on constructivism method, average scores of sculpture innovation ability of juniors was 24.47 before experiment, 26.40 after the experiment, with a difference of 1.93 in the average scores, which indicated that the scores had been improved significantly before and after the experiment.

The researcher conducted data analysis by using the mean, standard deviation, and dependent T-test based on the students' sculpture creation ability scores before and after the experiment. The results of the data analysis are presented in Table 4.

Table 4: Comparison of students' sculpture creation ability before and after the implementation of constructivism theory

Sculpture creation ability	n	full score	$\bar{X}$	SD.	df	t	p
pretest	30	30	24.47	3.05	29	3.96	.000
posttest	30	30	26.40	2.66			

\*\*Statistically significant at the level .01( $p < .01$ )

According to Table 4, through the implementation of constructivism method, students' sculpture creation ability significantly improved. This result supported the research hypothesis and demonstrated a statistically significant improvement at the level .01.



## Conclusions and Discussion

**Part 1: To study the factors that improve sculpture creation ability for undergraduates.**

1. Students' subjectivity and participation: Constructivism emphasizes the central position of students, and students' subjectivity and active participation are crucial to the teaching effect. Students are the main body of learning, and teachers should respect and play their leading role in teaching. Students' passion, interest and drive for sculptural innovation directly determine their investment and results in this area (Bai, 2018).

2. Educational environment and resources: In order to achieve innovation in sculpture, teachers need a quality teaching atmosphere and sufficient resources, including sculpture studios, relevant sculpture materials, tools and digital sculpture software. In the digital age, colleges and universities can make full use of new technologies to transform and update sculpture information. The growth of students' learning experience and innovation ability is directly affected by the configuration of these hardware and software resources (Deng, 2017).

3. Course contents and course design: Whether the design of course content is compatible with the teaching philosophy of constructivism and whether it can stimulate students' innovative thinking and practical skills is also a key factor affecting the cultivation of innovative ability. Therefore, it is necessary to adjust and arrange the teaching contents according to the professional characteristics through the reality and the development of the subject. In addition, the scientific and rational designs of the course, as well as whether it can guide students to master sculpture skills in a step-by-step manner, are the core elements that determine the learning effectiveness of students (Gao, 2021).

4. Evaluation and feedback mechanism: In the constructivist teaching model, this mechanism plays a crucial role in the cultivation of students' academic progress and innovative ability. Through proper assessment of students, teachers can make them clear their own strengths and weaknesses and problems that need to be solved, and then adjust their teaching strategies. Through timely and effective assessment and feedback, students can better understand their own learning progress, identify shortcomings, and seek corresponding improvement measures, so as to continuously enhance their ability in sculpture innovation (Zhang and Xiao, 2021).

In general, there are many factors that affect constructivism theory in the process of cultivating sculpture innovation ability, including students' subjectivity, teachers' roles and methods, teaching environment and resources, curriculum contents, evaluation and feedback mechanism, and social and cultural background. Among them, the learning subject and teaching mode, the teacher-student interaction mode, the teaching situation design, the choice of teaching content and its presentation form, the teaching method,



the teaching strategy and the teaching mode all have direct or indirect effects on the innovation ability of sculpture. In order to better implement the constructivism theory and stimulate students' innovative talent in sculpture, teachers need to consider various factors comprehensively and implement targeted optimization.

**Part 2: To examine the effects of implementing constructivism method.**

As can be seen in Table 3, through the application of teaching theory based on constructivism theory, average scores of sculpture innovation ability of juniors was 24.47 before experiment, 26.40 after the experiment, with a difference of 1.93 in the average scores, which indicated that the scores had been improved significantly before and after the experiment.

The researcher conducted data analysis by using the mean, standard deviation, and dependent T-test based on the students' sculpture creation ability scores before and after the experiment.

Through the implementation of constructivism theory, students' sculpture creation ability significantly improved. This result supports the research hypothesis and demonstrates a statistically significant improvement at the level .01.

In summary, after the implementation of constructivism theory, students' sculpture creation ability will be enhanced.

**Part 1: To study the factors that improve sculpture creation ability for undergraduates.**

Apply the teaching mode based on constructivism theory to enhance students' sculpture creation ability in university sculpture courses. This study focuses solely on the creative skills training of third-grade sculpture majors. The course is divided into four units, totaling 12 hours. The researcher, having examined various studies and literature on constructivism theory from multiple scholars, has consolidated these findings into a five-step framework for crafting lesson plans tailored to constructivism theory. Analysis of the data involved evaluating the lesson plan's quality through constructivism by three specialists, the research goals' appropriateness was the most fitting.

**Part 2: To examine the effects of implementing constructivism theory.**

Table 4 illustrated that when applying teaching theory -based on constructivism theory, juniors' sculpture innovation scores averaged 24.47 pre-experiment, and 26.40 post-experiment, showing a 1.93 difference in average scores.

The researcher conducted the data analysis by using the mean, standard deviation, and dependent T-test, centering on the students' performance in sculpture creation during the process of pre-experiment and post-experiment. Utilizing constructivism theory significantly improved the students' sculpture creation ability. The results support the research theory and demonstrate a statistically significant improvement at the .01 level.



## Recommendations

**1. Constructivism method holds that learning is an active construction process rather than a passive acceptance of knowledge.**

In the cultivation of sculpture innovation ability, attention should be paid to stimulating the initiative and creativity of students, encouraging them to actively participate in sculpture creation practice, and constructing their own knowledge and skills through personal experience and practical operation.

**2. Constructivism method emphasizes the interaction between students and the environment.**

In the sculpture creation, students need to constantly interact and communicate with sculpture materials, tools and environment, and constantly optimize and adjust their creative ideas and methods. This kind of interaction and communication not only helps to improve students' sculpture skills, but also helps to cultivate their innovative thinking and practical ability.

**3. Constructivism method pays attention to the sociality and cooperation of learners.**

In the cultivation of sculpture innovation ability, students should be encouraged to cooperate and communicate with others, share each other's experience and results, and learn from each other. This kind of cooperation and communication not only helps to expand students' vision and ideas, but also helps to cultivate their teamwork and communication skills.

To sum up, constructivism method provides some useful guidance for the development direction of sculpture innovation ability. By stimulating the initiative and creativity of students, emphasizing the interaction between students and the environment, and paying attention to the social and cooperative efforts of students, teachers can better cultivate and develop the innovative ability for students, and make contributions to the development of art and the progress of society.

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