

## Using Constructivism Theory to Improve the Sculpture creation ability of Undergraduate Students

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### ABSTRACT

The objectives of this research were: (1) To using Constructivism Theory to Improve the Sculpture creation ability of undergraduate Students And; (2) To compare students the changes Sculpture creation ability before and after Using Constructivism teaching method. The research method was a mixed method, including qualitative research and quantitative research. The sample was Through random cluster sampling, 30 first-year students sampling survey was conducted among 30 first-year students majoring in sculpture in Inner Mongolia University for nationalities. The instruments used for data collection were a lesson plan based on constructivist theory and Collaborative competency test. Data Analysis consisted of Quantitative data were analyzed through descriptive statistics; means, and standard deviation. And Quantitative data were analyzed through inferential statistics; Then calculate the different score of Cooperative Ability before and after using task-driven teaching method were analyzed through t – test for dependent.

The research findings revealed that;

(1) The results of Using constructivism theory to improve undergraduate sculpture creation ability of undergraduate students as follows: The researcher develops a teaching model by studying theories, principles, and concepts of teaching model development of educational scholars that are accepted in the research. developed as a teaching model According to the theory of creating self-knowledge by creating work pieces to encourage creativity of using Constructivism theory to Improve the Sculpture creation ability of undergraduate students according to academic principles, with 4 components as follows  
1. Theories, principles, concepts of the model  
2. Purpose of the model. This model aims to encourage learners to be creative in their originality. and meticulous thought. And  
3. The teaching process of the model. The researcher has applied principles, concepts, theories of

self-knowledge creation by Creation work of educational scholars who are accepted in research to synthesize a teaching process of a teaching model based on self-knowledge creation theory by Creation using constructivism theory to Improve the Sculpture creation ability of undergraduate students consists of 5 steps as follows: Step 1: Explore and review previous knowledge to create new knowledge. Step 2: Rethink to generate new ideas. Step 3: Practice creating workpieces Learners begin to create new works by themselves according to their ideas, interests, methods, and experiences. Step 4: Use media and the environment to create knowledge. And Step 5 Summarize knowledge by presenting the work. The results that the learners will receive from teaching and learning according to the model Learners develop initiative and detailed thinking. which is the nature of creativity.

The experimental results for the efficiency of the activity set were found that a series of learning activities Graphics creation program by use the theory of knowledge generation by creating works of value Percentage of the arithmetic mean from the inter-learning test ( $E_1$ ) was 85.50 and after using the learning activity package, there are percentage of the arithmetic mean of the scores from the test. Achievement was measured by activity set ( $E_2$ ) equal to 89.25. The results of the analysis of the efficiency of the learning activity set about the graphics program using the theory of knowledge generation by creating works Efficient during/after study

Education equal to 85.50/89.25 which is higher than the criteria of 80/80

2. The results of students' ability sculpture creation before and after using the constructivist teaching method theory to improve undergraduate sculpture creation ability of undergraduate students found that students had high post-learning creativity. than before studying Statistically significant at the .01 level. The result of study the creativity of sculpture after learning from the teaching model using the constructivist teaching method theory to improve undergraduate sculpture creation ability of undergraduate students found that Step 1 Explore and review previous knowledge to create new knowledge. Step 2 Rethink to create new ideas Step 3: Practice creating workpieces. Step 4: Use media and the environment to create knowledge. And Step 5 Summarize the knowledge by presenting the work

**Keywords:** Constructivism Theory, Improve the Sculpture creation ability, Undergraduate Students

## Introduction

According to the statistics of the employment destination of the college graduates in the author's school, since the first year of sculpture graduates in 2010, 44.1% of the graduates have chosen art teachers in primary and secondary schools as their careers, 32.6% of the graduates have engaged in other professions unrelated to sculpture, and only 17.2% of the graduates have engaged in sculpture-related professions, and are independent entrepreneurs. It can be seen that if sculpture majors in comprehensive universities want to cultivate sculpture professionals who can better meet the needs of the society, they should change the current teaching situation that focuses on the teaching of historical theory and the appreciation and criticism of previous works, but pay more attention to the self-learning ability and creative ability of learners. Create a good learning environment for learners, build learning scaffolding, and ultimately improve learners' sculpture creation ability, so that they can achieve lifelong development. There are also many domestic researches in this field. Early teaching research based on constructivism mainly focused on English teaching research. These studies show that constructivism teaching theory has good performance in teaching practice. For example, Liu Yinglin. (2012). believes that under the new teaching model based on constructivism, the role of college English teachers needs to be repositioned. College English teachers are no longer the center of teaching activities, but should be the organizer, coordinator and facilitator in teaching. (2013) Fan Lin and others discussed how the constructivist teaching theory fits in with the English teaching reform, and believed that the constructivist teaching theory has profound implications for the current English teaching reform and the cultivation of English innovative talents in China. (2012) Based on constructivism theory, Ye Wei put forward the strategy of guiding college English autonomous learning under the multimedia teaching mode to promote students' "meaning construction" of knowledge (2015) Huang Jing explored the teaching model of college English speech course from the perspective of constructivism. The practice of curriculum reform shows that constructivism learning theory is of great significance to the guidance of college students' speech competition In recent years, constructivism theory has been applied to other subjects except English. For example, Wu Yueyue and Hou Jie of the Music and Dance Department of Changsha Normal University believe that the scaffolding teaching paradigm with constructivism as the core emphasizes participation, cooperation, communication and independent construction. It is also introduced into kindergarten singing

activity teaching to solve some problems of teachers and children in singing activity teaching (2015). Wang Yanfen and others discussed the characteristics and implementation steps of teaching models such as four-step discussion teaching, four-stage flipping teaching, heuristic method of creating situation and case teaching in combination with constructivism theory (2018).

The practice of the above research shows that integrating constructivism into teaching reform can enhance students' learning interest, thus mobilizing students' learning initiative and helping students to master corresponding knowledge points. These practices also show that teaching reform based on constructivism can improve students' inquiry ability and team cooperation ability. In a word, the researchers applied the task-driven teaching method to the teaching practice of sculpture major in university, and achieved good teaching results, to provide students with independent learning and practice opportunities to enhance students' creativity. However, the task-driven teaching model is not static. It will continue to improve with the development of society and the renewal of culture. As a teacher, I should try my best to learn the educational theory and professional knowledge, improve my teaching ability and master more teaching skills. I believe that the task-driven approach is a practical teaching method, in the future in the workplace will adhere to this topic again.

### **Research objectives**

1. to using Constructivism Theory to Improve the Sculpture creation ability of undergraduate Students
2. to compare students the changes Sculpture creation ability before and after Using Constructivism teaching method.

### **Research Methodology**

#### **Population and sampling**

#### **Population**

There are 150 third-year students in the sculpture major of Inner Mongolia University for Nationalities, divided into five classes, with 30 students in each class

### **The Sample Group**

Through random cluster sampling, 30 first-year students sampling survey was conducted among 30 first-year students majoring in sculpture in Inner Mongolia University for nationalities

### **Content**

Apply the teaching mode under the constructivism theory to the college sculpture professional courses to improve students' sculpture creation ability. This paper only studies the creative skills training of the creative course of sculpture major in the third grade. The course consists of 4 units: 12h

- 1) Professional theoretical knowledge, 1 hour
- 2) Art Appreciation class, 2 hours
- 3) A Sculpture technique diversity training, 5 hours
- 4) Diversity of materials, 4 hours

### **Research Instrument**

Using constructivist theory to improve the creative skills of sculpture students. The research tools are as follows.

1. a lesson plan based on constructivist theory.
2. Collaborative competency test. 1) Studied the concept and development process of checklist form .2) Drafted the checklist form. At the end of each section, there is a space for experts to write suggestions that can be helpful in improving students' s Cooperation ability. 3)Experts verified the validity of checklist concept and development process. Taking the instrument to 3 experts to consider. The test consistency the index of congruency are between 0.60-1.00, 4) Modify checklist form according to suggestion.

### **Data collection procedure**

Data collection is done by researcher, The data collection is as follows:

1. Data collection and verification for test tools: 1) Coordinate with 3 professional scholars experts dispense official document from Bansomdej chaopraya University professional scholars experts and give information about data collection process and research tools : instructional model and checklist form about quality of instructional model

for consideration (Index of Objective Consistency: IOC). 2) Collect data from 3 professional scholars experts and analysis data for consideration (Index of Objective Consistency: IOC)

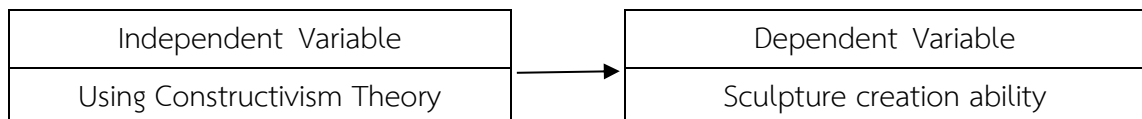
2. Data collection and validation for research work: 1) Relevant literature research: Collect literature related 2) Determination of the research time: the formal research will be carried out in May 2023, and the research data will be collected after the experimental research is completed. 3) Before and after teaching test: This research is experimental research. One Group Pretest – Posttest Design was used with the following experimental design.

### Data Analysis

Data Analysis 1. Quantitative data were analyzed through descriptive statistics; means, and standard deviation. 2. Quantitative data were analyzed through inferential statistics; Then calculate the different score of Cooperative Ability before and after using task-driven teaching method were analyzed through t - test for dependent.

### Research Framework

The research concept framework is as follows:



Research Framework Sculpture creation ability

### Results

1. The results of Using constructivism theory to improve undergraduate sculpture creation ability of undergraduate students as follows:

The researcher develops a teaching model by studying theories, principles, and concepts of teaching model development of educational scholars that are accepted in the research. developed as a teaching model According to the theory of creating self-knowledge by creating work pieces to encourage creativity of using Constructivism theory to Improve the Sculpture creation ability of Undergraduate students according to academic principles, with 4 components as follows;

1) Theories, principles, concepts of the model. Give students the opportunity to create ideas. and choose to learn according to their interests Learners bring their own ideas to create work pieces, build knowledge by using appropriate and sufficient media, technology, materials and equipment. The knowledge that learners create is the foundation for learners to create new knowledge endlessly. The teacher is the facilitator of learning for the learners. There is an environment and learning atmosphere that is different, diverse, warm, safe, allowing learners to interact with each other. Exchange ideas, collaborate, help each other among students. Learners recall what they have learned. Review what you have done and learned by listening to peers or teachers. 2) Purpose of the model. This model aims to encourage learners to be creative in their originality. and meticulous thought. 3) The teaching process of the model. The researcher has applied principles, concepts, theories of self-knowledge creation by Creation work of educational scholars who are accepted in research to synthesize a teaching process of a teaching model based on self-knowledge creation theory by Creation using constructivism theory to Improve the Sculpture creation ability of Undergraduate students consists of 5 steps as follows:

Step 1: Explore and review previous knowledge to create new knowledge. The lesson begins with conversation, exploration, review, experience, and prior knowledge of the learners in a friendly atmosphere. Make students feel warm, safe, at ease, learn happily. and introduced into new lessons by teachers, asking questions, creating situations or set activities for students to express and know the facts from their own experience.

Step 2: Rethink to generate new ideas. The teacher gives students the opportunity to mobilized brain power Share your thoughts on your experience in Step 1 with your friends and share them with your friends. or see samples of work when the amount of ideas is sufficient. Let students choose to use their ideas. Strange or interesting ideas to design and create their own work.

Step 3: Practice creating workpieces Learners begin to create new works by themselves according to their ideas, interests, methods, and experiences. At this stage, students may use Trial and error to create experience and knowledge.

Step 4: Use media and the environment to create knowledge. The teacher advises the learners to choose appropriate media, materials, and equipment to create exquisite work pieces. or show details. At this stage, the students interact with their peers. have exchanged opinions or helped each other as appropriate

Step 5 Summarize knowledge by presenting the work. The learners summarize the knowledge they have gained from the creation of the work. by presenting the work in front of the class transfer knowledge reflect and listened to suggestions from peers and evaluation of works by teachers

4) The results that the learners will receive from teaching and learning according to the model Learners develop initiative and detailed thinking. which is the nature of creativity.

The results of designing and creating a set of learning activities about the graphics program using the theory of creation self knowledge By creating a work piece, the steps are as follows.

1. Study the problems of teaching and learning management 2. The Analyze problems and needs. 3. Set design. activities using the theory of creating self-knowledge by Create work pieces 4. Check for accuracy 5. Experiment Activity set performance Activity Set Creation Result Yes Total 4 units: This course consists of 4 units: 12 hours 1) Unit 1 Professional theoretical knowledge, 1 hour 2) Unit 2 Art appreciation class, 2 hours 3) Unit 3 Diversified training in sculpture techniques, 3 hours 4) Unit 4 Creative practice, 7 hours including the time spent using the activity set, amounting to 12 hours 3 experts have checked the content validity. To use the activity set suitability between research objectives, Content Learning activities assessment and evaluated and used to calculate the congruence index (IOC) found that the index of congruence of the activity set Unit 1- 5. There was a congruence index of the overall set of activities 0.60-100. Therefore, the activity kits are of appropriate quality and consistent with research objectives.

The experimental results for the efficiency of the activity set were found that a series of learning activities Graphics creation program by use the theory of knowledge generation by creating works of value Percentage of the arithmetic mean from the inter-learning test ( $E_1$ ) was 85.50 and after using the learning activity package, there are percentage of the arithmetic mean of the scores from the test.

Achievement was measured by activity set ( $E_2$ ) equal to 89.25. The results of the analysis of the efficiency of the learning activity set about the graphics program using the theory of knowledge generation by creating works Efficient during/after study Education equal to 85.50/89.25 which is higher than the criteria of 80/80



2. The results of students' ability sculpture creation before and after using the constructivist teaching method theory to improve undergraduate sculpture creation ability of undergraduate students found that students had high post-learning creativity. than before studying Statistically significant at the .01 level.

3. The result of study the creativity of sculpture after learning from the teaching model using the constructivist teaching method theory to improve undergraduate sculpture creation ability of undergraduate students found that

Step 1: Explore and review previous knowledge to create new knowledge.

1) The teacher puts the lyrics sheet on the board and together sings, finger prints and hand prints. Have you ever seen or experienced printing? What material is used as a mold? And how are the steps? 2) Teachers and students discuss how to use hands as molds. and what equipment is needed 3) The teacher had the students observe their own hands and ask questions. What parts of the hand can be used as molds? What patterns can each part of the hand be printed on? Have each student try different parts of his hand on A4 size paper and observe the results.

The result of the activity was found that students join together to sing and clap their hands happily to the rhythm. Singing correctly in no time because it uses a familiar melody students talk about printing. Three students shared their printing experience. and other students began to remember Students together discuss how to use different parts of the hand. What materials do you use? Only a small fraction of the students used their fingers to print pictures. The teacher advises the inexperienced students to observe the lyrics that have been sung. Then the students were asked to paint different parts of their hands and print them on A4 size paper in various formats. The students were determined and interested in the activity. There are some students who still lack confidence. But when seeing other friends do it, they can do it themselves. But there is still a delay. Many students were excited about the experience of printing with different parts of their hands. In the print experiment, most students used their fingers to type.

Step 2: Rethink to create new ideas 1) The teacher organizes groups of 4 students in each group. Then, students bring their printouts from different parts of their hands that students have tried typing in Step 1 to share their opinions with them. friends in group 2)The teacher asked the students that from exchanging opinions with friends students think about what parts of their hands can be molded and what forms they can print. Have the teacher

list on the board the ideas students respond to. to get a sufficient amount of answers 3) The teacher lets the students see examples of printmaking works from different parts of their hands so that students can see the guidelines for creating works. 4) Teachers let Undergraduate students choose their own ideas to create new ideas. By designing creative prints from different parts of the hand that convey meaning and position in the picture to create novelty and different according to their own style.

The result of the activity was found that the undergraduate students exchanged ideas that they had tried printing pictures from different parts of the hand in Step 1 well. From the exchange of ideas, the students realized that they could Can I use any part of my hand to type? What format will it look like after printing? When the teacher asks the students questions Still not able to answer the number is not enough. And most of the answers are done by using fingers to type pictures. The teacher showed the students a sample of the printmaking work as a guide. and asked what part of the hand was used in each picture. The students were interested in a sample of the printout. Students can share experiences from discussions and exchange ideas with friends. brainstorming and from viewing the sample images of the work to design and create works of printing images from different parts of the hands according to their own patterns.

Step 3: Practice creating work pieces. The students practice creating printouts from different parts of their hands as they have been designed. To create novelty and difference by trying to print on A4 size document paper to be confident first. Once confident, then print the image on drawing paper. Then decorate the details of the image appropriately.

The result of the activity was found that the students started to practice the creative work of printing pictures from various parts of their hands well. All students worked with determination and determination. Using the learning experience from the teaching model in steps 1-2 to design the work, many students try to print pictures on A4 paper to be confident as they have learned in the previous steps. Trial print results are not satisfactory or there are problems. Students have repeated experiments, tried to improve problems with various methods, and consulted with friends in the group about the problems they encountered. Discussions suggested ways to solve problems together. From the observations, it was found that the student's work was similar to that designed in the second learning activity.

Step 4: Use media and the environment to create knowledge. The teacher suggests the learners to choose different types of media, materials, and equipment to be versatile and appropriate in creating printouts from different parts of the hand, such as the selection of colors. The ratio of water used to mix the paint. Choosing the size of the brush selection of hand parts for printing, etc., in order to obtain works that are novel, different, and have

The result of the activity was found that When advising students about the selection of different types of materials and equipment to achieve suitability and have a variety of creative works Printing pictures from different parts of the hand makes students see the importance of choosing materials. to be more appropriate Most students still do not use various tools properly, but when teachers give advice and allow students to practice using new types of materials, students can see the value and differences of each type of materials, such as the size of brushes. choice of colors or pick up other types of colored pens to decorate your work to be more beautiful and detailed. Students interact and help each other as they work. causing new learning to increase from the observation that the work of students have added more details different from what the students designed in the Stage 2 learning activities.

Step 5: Summarize the knowledge by presenting the work 1) The teacher groups 4 students in each group. Then have the students write down the details of the work

2) Have students present their work of printing pictures from different parts of the hand within their groups. By taking turns telling the various information recorded above to the group members. 3) Ask the group members to choose printouts from different parts of the hand that are new, different, and decorated. 4) Students display printouts from different parts of their hands to be displayed on a supervision board for teachers to evaluate. Work 5)The teacher makes an appointment for students to prepare various natural materials according to their interests. come in the next hour. To practice printing images from natural material molds.

The result of the activity was found that students write notes on specific topics that are not detailed. while being able to remember what has been done in printing from different parts of the hand in each previous step by observing from writing only a short record in the record lacking details, indicating the creation of knowledge by using materials equipment for creating works As for the presentation of the work, the members of the group take turns as Presenter recorded information There is an inquiry for more details. make

learning together After that, students select 2 works that are novelty, different, and appropriately detailed in the group, whereby students express their reasons for selecting the works. Selected student representatives present and share their knowledge and experiences in front of the class. but still not good at telling assertive Especially the part that creates new knowledge or experience that the students have not yet transferred. Teachers then help by asking questions for students to answer. The students jointly brought the printouts from different parts of their hands to be exhibited at the information board in front of the art room for teachers to evaluate their work. Teachers make appointments for students to prepare natural materials according to their interests in the next hour of learning activities.

## Discussion

The development of a teaching model based on the theory of using constructivism theory to improve undergraduate sculpture creation ability of undergraduate students can discuss the research results as follows:

1. This research is a research to develop a teaching model. by synthesis theory Creation of self-knowledge by creating works of art to using constructivism theory to improve undergraduate sculpture creation ability of undergraduate students. that can encourage creativity of undergraduate students to be higher according to the assumptions of the research. This is because

1.1 The teaching model created by the researcher has a development process in accordance with relevant principles, concepts, and theories. The researcher used the teaching model development steps as follows: 1) the study of basic information, concepts, related theories, 2) the development phase, 3) the trial use phase, and 4) the evaluation phase. This is consistent with Dick and Carey (Dick and Carey, 1996: 2-7) who have mentioned the process. teaching style development That should consist of the following steps: 1) Basic information study. Related concepts and theories 2) Development stage Classified as the development of knowledge content. create a teaching process develop teaching and learning activities Create a lesson plan create test and production development 3) the trial stage In order to know the things to be aware of in teaching and learning management. teaching administration or environment management 4) Evaluation stage to improve In part, each step is better according to the objectives. And in accordance

with Wilot Wattananimitkul (2016: 316-317) that the process of teaching style development consists of 5 important steps, namely 1) setting the framework of the teaching style. by studying the current situation and related theoretical concepts; 2) teaching model construction stage; 3) teaching model documentation production stage; 4) teaching model quality inspection stage. by a qualified person. by experts and used for trial, and 5) the revision and improvement of teaching styles By bringing various information that has been reviewed and recommended by experts And bring the results from the experiment to improve in order to get a teaching model that is complete and complete From the foregoing, it can be seen that The development process of Wilot's teaching style Wattananimitkul (2016: 316-317) classified the teaching style creation or development stage into 2 stages, which are 2) the teaching style creation stage and 3) the document creation stage. assembly of the teaching model It is different from the researcher who combines the development stage or the teaching style creation stage in the same stage, i.e. 2) the development stage. But the meaning of the development of the teaching style is not different.

1.2 The teaching style created by the researcher is presented in accordance with the principles, concepts of the form. In this research on the development of a teaching model based on the theory undergraduate students. There are 4 main essences of the model as follows: 1) theories, principles, and concepts of the model, 2) the objectives of the model, 3) the teaching and learning process of the model, and 4) The results that learners will receive from teaching according to the model This is in line with Tihana Khammani (2020: 224) which mentions the presentation of 4 essences of the teaching model, namely 1) the theory or principle of the model, 2) the purpose of the model, 3) the process of the model. pattern and 4) the effect that will be obtained from using the pattern. In addition, the essence of the four teaching styles mentioned above Also appears in Joyce, Weil, and Colhoun's presentation of the teaching style (Joyce, Weil, and Colhoun, 2004: 12), which mentions the components of the teaching style as It should consist of the following parts: 1) the goals of the instructional model; 2) the basic principles or concepts of the model; 3) details about the teaching process or its implementation; 4) evaluations indicating the results. that is thought to arise from the use of patterns From the foregoing, it can be seen that the conclusion The teaching style presentations of Joyce, Wells and Colhoun are named and sequenced differently from the core presentations of the teaching styles of this

research. However, despite having different names and ordering. But the meaning of presenting the essence of the teaching style is similar.

1.3 The researcher has applied the theory of creating self-knowledge by creating work pieces. (Constructionism) of Professor Seymour Papert (Seymour Papert, 1999), which the theory has been accepted as a theory that can develop the thinking process of students. to develop into a form Teaching to undergraduate students, which has a teaching process of 5 steps as follows: Step 1: Explore and review previous knowledge to create new knowledge by reviewing learners' previous knowledge. Friendly. Let the learners feel warm and happy, then enter a new lesson according to the interests of the learners, in line with Tisana Khaemane (2020: 96) that the theory of creating self-knowledge by creating works of art Caused by the learners create their own knowledge. in a learning atmosphere that makes students feel warm, safe, friendly, enabling students to Continue to create new knowledge endlessly. Step 2 Rethink to create new ideas. Allow students to brainstorm. Exchange ideas and experiences with friends. or allow students to see examples of work and design and create works according to their interests, consistent with De Vries, Zan et al. (De Vries, Zan, et al., 2002: 35) have discussed the theory of intellectual development. which is the foundation of the theory Creation of self-knowledge by creating works that children will bring experiences from surrounding things come to create knowledge which encourages children to build knowledge is providing opportunities for children to exchange ideas, experiences, and collaborate in a socially ethical atmosphere. Learners work on creating their own work to create knowledge. This is in line with Wasinee Israsena Na Ayuthaya (2017: 46-49) who stated that The theory of creating self-knowledge by creating works is teaching by allowing learners to create things in order to create a body of knowledge. This is often a project or creation of new pieces of knowledge that is durable and profound because learners gain direct experience and knowledge. Able to apply knowledge to solve problems and continue to build on. Step 4 Use media and environment to create knowledge. Learners create work pieces using materials. A variety of equipment is a tool for creating knowledge. interact with friends or help each other as appropriate This is in line with Kulissara Chitchayavanich (2020: 28) who mentions the use of the theory of creating self-knowledge by creating workpieces that materials, equipment, and tools that learners use to create workpieces. as a means of creating knowledge in a friendly learning atmosphere Conducive to learning to be happy. Step 5 Summarize knowledge by presenting

the work. Learners summarize their knowledge by presenting their work. transfer knowledge reflect Listening to opinions from peers and evaluating the work from teachers is in line with Kanlayarat Sirimathep (2014: Online) who mentioned the important process of the theory of self-knowledge creation by work creation, namely reflection. Remembering the learnings that have passed, how they learned it. How to solve problems and listen to comments from friends or teachers. to plan further learning in the future

#### 1.4 The researcher has developed a teaching model that promotes creativity. There is a synthesis of principles, concepts, theories of creativity. of well-known and widely accepted scholars such as Osborn (Osborn, 1963), Perkins (Perkins, 1984), Klausmeier (1984), Taweesak Chindanurak (2015) Teerasak Upamaiyathichai (2017) by developing it as a teaching model. to promote creativity of undergraduate students, such as brainstorming techniques

In order to create ideas that are diverse, new, consistent with Osborn (Osborn, 1963) said that Using the same methods or thinking alone may not find the answer. But brainstorming will get a variety of new answers or ideas from group members. It's a very effective way to get creative. Use the method of evaluating creativity from the work, consistent with Perkins (Perkins, 1984: 18) that stated that measuring creativity The most certain are works created by a person. Training students to be creative should not focus on the process of thinking fluently alone. But students must also be able to design and invent their work. Give students the opportunity to express themselves. prepare materials variety of devices consistent with the concept Instructional management that promotes creativity of Surang Kowtrakul (2016: 144, cited by Klausmeier, 1984) said that the opportunity for learners to express themselves and arrange many teaching tools. for students to express their thoughts and creative works

Creating an environment and learning atmosphere that is relaxed, not stressful, will encourage students to be creative, in line with Paitoon Sinlarat et al. that promotes creativity that It should create a stress-free atmosphere. It is an atmosphere in which a person feels spiritually safe, valued, accepted. Freedom of expression without being criticized or assessed. and encouraging students to create works in line with Teerasak Upamaiyathichai (2017: 54) mentioned teaching and learning that promotes creativity that creativity usually arises from thinking. Imagination and creation Although these traits are difficult to teach, they can be developed if encouraged through activities. or the creation of work

2. The comparison of pre-learning and post-learning creativity with a teaching model based on the theory of self-knowledge creation by work piece creation. To promote creativity, it was found that the creativity of undergraduate students after learning was higher than before. The statistical significance at the .01 level was in accordance with the research hypothesis. This is because

2.1 Theory of creation of self-knowledge through work creation and creative theory  
There are several principles and concepts that are consistent and complementary. Resulting in the organization of learning activities according to the teaching model based on the theory of self-knowledge creation by creating work pieces. Can promote the creativity of the students as well. The important details are as follows. Chaiwat Suthirat (2012: 24-25) said that the learners can create knowledge. on their own can be successful Teachers must provide an appropriate learning atmosphere. Must be open-minded to listen to learners' opinions, in line with Taweep Abhisit (2016: 18) talking about fostering creativity. This can be done by providing a learning atmosphere for students to have freedom of thought and action. and related with Wasinee Israsena Na Ayuthaya (2017: 46-47) said that the theory of self-knowledge creation by work piece creation students should interact with each other. There was an exchange of ideas, collaboration, and mutual assistance between the learners, in line with Davis (Davis, 1998: 145) mentioned learning management that promotes creativity. using brainstorming or brainstorming techniques which will allow for creativity, and related with Teerasak Upamaiyathichai (2017 : 63) said that knowledge generation theory by yourself by creating work pieces It is a learning process that takes place while the learner creates the piece. which are concrete and tangible, whether it is an essay, a doll, a picture, a computer program, a robot, a song, consistent with Tisana Khaemmani (2020: 97) said that most natural media and artistic materials can be used as materials for creating knowledge, such as paper, clay, wood, metal, plastic, soap and other leftovers, in line with the Office of the Commission. Civil servants (2017: 23) talked about the promotion of creativity that Should allow children to use a variety of materials or waste materials to create new things, which the provision of a variety of materials will encourage children to invent things, which will lead to being creative consistent with Kanlayarat Sirimathep (2014) discussed the important processes of the theory. Creation of self-knowledge by creating pieces of work, which is the process of reflection. Learners recall what they have learned. review what has been done Learned by listening to the opinions of friends or teachers.



Consistent with Surang Kowtrakul (2016: 144, referring to Klausmeier, 1984) proposed a teaching management approach that promotes creativity as follows: Teachers should provide feedback so that students can see how they did well or badly namely reflection. Remembering the learnings that have passed, how they learned it. How to solve problems and listen to comments from friends or teachers. to plan further learning in the future.

1.4 The researcher has developed a teaching model that promotes creativity. There is a synthesis of principles, concepts, theories of creativity. of well-known and widely accepted scholars such as Osborn (Osborn, 1963), Perkins (Perkins, 1984), Klausmeier (1984), Taweesak Chindanurak (2015) Teerasak Upamaiyatchai (2017) by developing it as a teaching model. to promote creativity of undergraduate students, such as brainstorming techniques In order to create ideas that are diverse, new, consistent with Osborn (Osborn, 1963) said that Using the same methods or thinking alone may not find the answer. But brainstorming will get a variety of new answers or ideas from group members. It's a very effective way to get creative. Use the method of evaluating creativity from the work, consistent with Perkins (Perkins, 1984: 18) that stated that measuring creativity The most certain are works created by a person. Training students to be creative should not focus on the process of thinking fluently alone. But students must also be able to design and invent their work. Give students the opportunity to express themselves. prepare materials variety of devices consistent with the concept Instructional management that promotes creativity of Surang Kowtrakul (2016: 144, cited by Klausmeier, 1984) said that the opportunity for learners to express themselves and arrange many teaching tools. for students to express their thoughts and creative works Creating an environment and learning atmosphere that is relaxed, not stressful, will encourage students to be creative, in line with Paitoon Sinlarat et al. that promotes creativity that It should create a stress-free atmosphere. It is an atmosphere in which a person feels spiritually safe, valued, accepted. Freedom of expression without being criticized or assessed. and encouraging students to create works.

2. The comparison of pre-learning and post-learning creativity with a teaching model based on the theory of using constructivism theory to improve undergraduate sculpture creation ability of undergraduate students after learning was higher than before. The statistical significance at the .01 level was in accordance with the research hypothesis. This is because

## 2.1 Theory of creation of self-knowledge through work creation and creative theory

There are several principles and concepts that are consistent and complementary. Resulting in the organization of learning activities according to the teaching model based on the theory of self-knowledge creation by creating work pieces. Can promote the creativity of the students as well. The important details are as follows. Wasinee Israsena Na Ayuthaya (2017: 46-47) said that the theory of self-knowledge creation by work piece creation Students should interact with each other. There was an exchange of ideas, collaboration, and mutual assistance between the learners, in line with Davis (Davis, 1998: 145) mentioned learning management that promotes creativity. using brainstorming or brainstorming techniques which will allow for creativity Teerasak Upamaiyathichai (2017 : 63) said that knowledge generation theory by yourself by creating work pieces It is a learning process that takes place while the learner creates the piece. which are concrete and tangible, whether it is an essay, a doll, a picture, a computer program, a robot, a song, consistent with Praphansiri Susaorat (2013: 235-236) saying that children who are successful in creativity Caused by giving children the opportunity to create a piece of work. Get work experience Tisana Khaemmani (2020: 97) said that most natural media and artistic materials can be used as materials for creating knowledge, such as paper, clay, wood, metal, plastic, soap and other leftovers, in line with the Office of the Commission. Civil servants (2017: 23) talked about the promotion of creativity that Should allow children to use a variety of materials or waste materials to create new things, which the provision of a variety of materials will encourage children to invent things, which will lead to being creative. Kanlayarat Sirimathep (2014) discussed the important processes of the theory. Creation of self-knowledge by creating pieces of work, which is the process of reflection. Learners recall what they have learned. review what has been done Learned by listening to the opinions of friends or teachers. Consistent with Surang Kowtrakul (2016: 144, referring to Klausmeier, 1984) proposed a teaching management approach that promotes creativity as follows: Teachers should provide feedback so that students can see how they did well or badly. But teachers must be careful not to criticize students until they are discouraged.

## 2.2 Teaching and learning activities based on self-knowledge creation theory by

Creation work This is a theory that focuses on students to be knowledge creators through hands-on activities to create knowledge creation by using media, materials, equipment, and the environment to create knowledge. When the students create a concrete piece of work.

able to clearly see the knowledge and creativity of the students This is in line with the research of Wassana Changpho (2019) who studied the development of a theoretical teaching model. Constructionism To promote creative English writing skills for students in grade 4, the study found that Students learn with a teaching style based on Constructionism theory. To promote creative English writing skills For Mathayomsuksa 4 students, the results showed that students had English writing skills. Creative after school is higher than before. with statistical significance at the .01 level, consistent with research by Amornrat Thongchan (2019) who studied learning outcomes learning unit “Design and decoration model” and creativity of Mathayomsuksa 3 students. The objectives of this study were 1) to study the learning outcomes. Model design and decoration learning unit of Mathayomsuksa 3 students by self-education learning management by Work Creation 2) To compare the creativity of Mathayomsuksa 3 students by self-knowledge learning management by creating work before and after school. learning unit Model design and decoration of Mathayomsuksa 3 students after studying higher than before with statistical significance at the 0.05 level and the creativity of Mathayomsuksa 3 students by learning management Creation of self-knowledge by creating works of art After school was significantly higher than before. Statistical at the 0.05 level and consistent with Chamas Ditcharoen (2014) has researched the development Creativity and Learning Achievement of Mathayomsuksa 6 Students by Project-Based Learning Management Theory of Self-Knowledge Creation by Work Creation in the applied robot development programming course The results showed that Students who received a project-based learning arrangement based on the theory of using constructivism theory to improve undergraduate sculpture creation ability of undergraduate students Interest-based robot projects can be created to assess creativity. with an average creativity score of 85.50 percent and 90 percent of students passing the criteria.

### **Suggestion**

subject research The development of a teaching model based on the theory of using constructivism theory to improve undergraduate sculpture creation ability of undergraduate students. The researcher has 2 suggestions: 1) suggestions for the implementation of the teaching model, 2) suggestions for further research. The details are as follows.

### **Suggestions for the implementation of the teaching style**

1. To implement the steps in the teaching model based on the theory of the theory of using constructivism theory to improve undergraduate sculpture creation ability of undergraduate students. by yourself by creating work pieces to promote creativity of students in grade 5, at each step, the teacher should have the following roles:

Step 1: Teachers should start having students review previous knowledge or review lessons. past with less stressful activities Create a relaxed, comfortable atmosphere to ensure that students will learn happily before entering a new lesson

Step 2: Teachers should allow students to exchange ideas with their peers. with a good environment and atmosphere as factors Encourage students to work together to express ideas or show new methods, or the teacher may show students examples of their work.

Step 3 Teachers should let students do the work by themselves. Teachers are only facilitators, mentoring and encouraging students. It may give students the opportunity to do some trial and error. to create experiences and create knowledge by oneself

Step 4 Teachers should prepare additional materials and equipment for students to used to create works Instruct students to add additional details to their work. Including the opportunity allow students to interact with each other help each other as appropriate

Step 5 The teacher asked the students to sum up the knowledge from the creation of the work and took turns to tell the group's friends. or select works that are novel or have interesting details to present in front of the class transfer knowledge reflect and listen to suggestions from friends and Assessment of work from teachers

2. Before applying the teaching model based on self-knowledge creation theory of using constructivism theory to improve undergraduate sculpture creation ability of undergraduate students to use. Teachers should study the components of the teaching style to understand thoroughly. In order to know the relationship of the components of the teaching model, consisting of 1) theories, principles, concepts of the model, 2) the objectives of the model, 3) the teaching and learning process of the model, 4) the results that the learners can be obtained from the instruction of the model which will enable the teaching style to be applied The highest quality and effectiveness with the students.

3. Due to the teaching and learning style in each step, students are encouraged to practice and create new works with suitable and sufficient materials and equipment.

Teachers must clarify the students an understanding of their roles and responsibilities. By cooperating in the preparation of materials and equipment that are of their interest, meaningful, and useful for their own use. to make the creations work It's new, different, and has interesting details. which is an important aspect of creativity

### **Suggestions for further research**

1. Teaching methods should be developed according to the theory of self-knowledge creation the theory of using constructivism theory to improve undergraduate sculpture creation ability of undergraduate students such as development of a teaching model based on self-knowledge creation theory by creating work pieces. to promote creative problem-solving skills

2. Teaching methods should be developed according to the theory of the theory of using constructivism theory to improve undergraduate sculpture creation ability of undergraduate students with other learning methods to promote creativity, such as developing a teaching model based on self-knowledge creation theory by creating work pieces in conjunction with the design thinking process to promote creativity.

3. Teaching methods should be developed according to the theory of self-knowledge creation by creation work in conjunction with other learning theories to develop other skills, such as developing a teaching model based on the theory of using constructivism theory to improve undergraduate sculpture creation ability of undergraduate students by creating work pieces together with cooperative learning theory to promote teamwork skills.

4. There should be a set of learning activities using theories. self-knowledge creation by creating work on the others subject according to the curriculum of learning, occupational and technology (information technology) at each level to be Ways to develop teaching and learning to be more efficient.

5. There should be studies for the design and construction of the set. learning activities by using the theory of creating self-knowledge by creating workpieces in other variables such as ability to solve problems, practice creative thinking technology etc.

## References

- Chun-long zhang.2019 (9) **The development of constructivism educational theory and its significance [J]**. Education Theory and Practice, : 43-44
- Cao Ting (2021) **Research from the multicultural perspective of the Sculpture Creation course**, Teaching and Research, No.12,2021, pp. 30-33
- Deng Xiaoyan.2017 (3) **A Study on Sketch Curriculum Design from a Constructivist perspective [J]**. Monthly Journal of Aesthetic Education, : 21-24.
- Hong Cuifen (2019). **An Analysis of the teaching practice of Art Education from the perspective of constructivism**. Education and Teaching Forum, Volume 38,2019, Issue 3, pages 28-29.
- Jiang Jiao Jiao.2020,10 (6) **Inquiry of university physics teaching based on constructive teaching mode [J]**. Research on audio-visual Education, : 92-93.
- Liu Hao, Zhou Weihua. 2021 (2) **Application of Constructivist Learning Theory in English Reading Teaching for College Students [J]**. Foreign Language Education and Research, : 155-162
- Liu Jingjing, Zhao Shichao.(2020.11) **Research on Chemistry Teaching Strategies Based on a Constructivist View [J]**. Chemistry Education, : 77-81.
- Li Huan. (2021,3) (13) **Application of Construction Model in College English Writing Classroom [J]**. China Audio-visual Education, : 98-99.
- Li Yan, Zhang Lijun.(2020,)36 (9) **Research on English Teaching Practice in Higher Vocational College Based on Construction Theory Teaching Model [J]**. Science and Technology Bulletin, : 122-124
- Li Jing (2016). **The cultivation of creative ability in sculpture education**. Fine Art and Design, Issue 4,2016, pages 28-29.
- Li Ming yao. (2019,9). **Research on art education practice from the perspective of constructivism [J]**. Art Education Research, :55-60.
- Lu Yuling (2020). **Analysis on music teaching Strategies based on constructivism theory**. In Modern Music Education, Issue 9,2020, pp. 128-129
- Lin Jianxun, Zhang Yan, Li Hong.(2019) **Research on art creation teaching in primary and secondary schools from the perspective of constructivism [J]**. Research on Art Education, 2019 (01): 30-36.

- Shu-hui li. (2019) **Exploration on the integration of constructivism and art education [J]. Art and Design**, 2019 (3): 133-134.
- Wang Tingting, Chen Qiuying.( 2020) **Research on library information literacy education from the perspective of constructivism [J]. Library Forum**, 2020 (9): 70-75.
- Xing Yong, Song Wensheng (2021). **Research on the music education model based on the Constructivist perspective [J]. Music and Dance**, 2021 (3): 92-94.
- Xue-fen liu. (2017,8) **Creative thinking and art education from the perspective of Constructivism [J]. Aesthetic Education Research**, 2017,8:71-74.
- Yang Yihua. (2021,5 ) **Inquiry on middle school history teaching based on constructivism teaching mode [J]. Education and Teaching Forum**, 86-87.
- Yuan Yi, Lin Mengjie. (2021) **Research on high school geography teaching practice based on constructivism teaching mode [J]. Primary and Secondary Education and Teaching Monthly**,38 (1): 140-141.
- Zhu Cuiling and Zhou Lin (2017). **Research on the cultivation of sculpture Creation ability based on creativity education. Fine Art and Design**, Issue 12,2017, pages 31-32
- Zhong Jing, Wu Wenqian, Peng Beibei (2019). **An empirical study on cultivating college students' creativity from the perspective of constructivism. Higher Education Research**, Issue 02,2019, pages 41-45
- Zhang Haoran and Xiao Yanping (2021). **Drama teaching strategy from a constructivist perspective. Research in Drama Teaching**, Issue 6,2021, pages 59-60.