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Development of a Photoshop course based on task-based Learning and Gagne's Teaching Model to Improve the Innovative Ability of First-year Students at Anhui Wenda University of Information Engineering

Qin Lixia[1], Wassaporn Jirojphan[2] and Danucha Saleewong[3]
[1] Ph.D. student, Curriculum and Instruction Program, Valaya Alongkron Rajabhat University under the Royal Patronage Pathum Thani Province, Thailand
[2,3] Lecturer, Curriculum and Instruction Program, Valaya Alongkorn Rajabhat University under the Royal Patronage Pathum Thani Province, Thailand
[1]E-mail: 435956351@qq.com, ORCID ID: https://orcid.org/0000-0001-8157-0758
[2]E-mail: wassaporn@vru.ac.th, ORCID ID: https://orcid.org/0009-0007-6934-5372
[3]E-mail: danucha@vru.ac.th, ORCID ID: https://orcid.org/0000-0001-8145-6170
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Abstract
Background and Aim: Photoshop courses must incorporate both Gagne's teaching model and task-based learning to foster students' innovative thinking. This combination guarantees that students receive organized, efficient instruction while working on real-world projects, which enhances their creativity and problem-solving abilities. This research and development research aimed to 1) determine the effectiveness of the Photoshop course based on task-based learning and Gagne's teaching model to continuously improve the innovative ability by comparing the development of students' innovative ability after implementing with 4 times, and 2) compare students' satisfaction after implementing the Photoshop course based on task-based learning and Gagne's teaching model.
Materials and Methods: The sample was a class of 37 first-year students, majoring in product design at Anhui Wenda University of Information Engineering. They were derived by cluster random sampling. The instruments used in this research were (1) a Photoshop course based on task-based learning and Gagne's teaching model, (2) lesson plans, (3) an innovative ability evaluation form with 0.89 reliability, and 4) a student satisfaction questionnaire with 0.98 reliability. The statistics used to analyze the data included the mean, standard deviation, one-way repeated measures ANOVA, and t-test for one sample.
Results: Mauchly's test indicated a violation of sphericity, requiring Greenhouse-Geisser corrections. Significant improvements in students' innovative ability were observed across four-time points ($F=251.830$, $p<0.001$). Additionally, student satisfaction with the Photoshop course significantly exceeded the set criterion ($t = 97.4$, $p < 0.05$).
Conclusion: The implementation results show that the difference in students' innovation ability each time different at the 0.05 level of significance, they were considered the students' innovation ability was increasingly higher and continuously each time from the first time to the last time, students' satisfaction was at a high level.
Keywords: Task-based Learning; Gagne's Teaching Model; Photoshop Course; Innovative Ability

Introduction

Photoshop is a powerful graphics editing software developed by Adobe. It's widely used by professionals and amateurs alike for tasks such as photo editing, graphic design, and more. With its extensive array of tools and features, Photoshop allows users to manipulate images in countless ways, from basic adjustments like cropping and color correction to advanced techniques such as layering and masking. Its versatility and comprehensive capabilities make it a staple in many creative workflows across various industries. Graphics and Image Processing Photoshop is a very practical course. Due to the rapid development of network technology, graphics and image processing Photoshop technology has been widely used, and many schools have launched graphics and image processing Photoshop courses to meet the needs of students Peng (2008). The Photoshop course is a compulsory course for many majors in vocational colleges and a key course for design and other majors. Photoshop software has been widely used in industrial design, web page production, advertising, and other fields, and occupies a very important position in the professional courses of vocational colleges.

Art and design majors are popular majors generally offered by colleges and universities, and product design is a branch of it. It is also the basic software for the follow-up courses of this major, such as font design, packaging design, furniture design, and other courses. application class. In the product design major, the Photoshop course involves comprehensive knowledge such as painting, aesthetics, and computer operation skills, which can better cultivate students' hands-on ability and

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stimulate students' innovative ability. The nature of the course determines that the traditional teaching methods cannot be used in the course teaching. The Photoshop course has the characteristics of strong practicality and trivial theoretical knowledge. If the traditional teaching concept of "emphasizing lectures and neglecting practice" is adopted, it is difficult to achieve the teaching purpose, and it is difficult for undergraduate students to grasp trivial theoretical knowledge. The contradiction between teaching and learning is becoming more and more prominent. The specific questions are as follows:

1) In the traditional software teaching method, the teacher's lecture-demonstration 2)Students are not clear about the knowledge and theoretical framework of the Photoshop course 3)In the past, the teaching method that only focused on operational skills made students gradually develop the habit of learning software only for learning tools, ignoring the relationship between this course and other professional courses, and not paying attention to the beauty and integrity of works, thinking that as long as they learn how to use Software tools will do. This is not conducive to the cultivation of students' aesthetic ability and design ability. 4)There is no unique aesthetic standard in design works. In the Photoshop software, the same "special effect" has more than one way to realize it. The dominance and authority of teachers in traditional classroom teaching will inevitably lead to students' thinking patterns, which is not in line with the cultivation of innovative thinking. 5) The reform of the training mode for undergraduates has led to insufficient class hours, and the "3 and 1" training mode is implemented, that is, students study at school for 3 and a half years, and practice in enterprises for 6 months. In this way, the time for students to study at school is greatly reduced, and the weekly class hours of the Photoshop course are also reduced from the original 6 sessions/week to 4 sessions/week. However, the training level of the teaching objectives of the course cannot be lowered due to the reduction of class hours, so how to complete the teaching tasks of the Photoshop course with quality and quantity in the case of insufficient class hours, to achieve the training level of the teaching objectives of the course, is worth thinking about by colleagues. (Liu, 2017)

Task-Based Learning (TBL) is an educational approach that focuses on learning through the completion of meaningful tasks. Instead of traditional teaching methods that often rely on rote memorization, TBL emphasizes practical, real-world tasks that students might encounter in their daily lives or future careers. These tasks can range from problem-solving activities to projects that require critical thinking and collaboration. deeply analyzed the psychological characteristics and cognitive level of secondary vocational students in "Practice Research on task-Based Learning in the Teaching of FLASH Courses in Secondary Vocational Education", and proposed to explore the use of task-driven teaching mode in the teaching of flash courses. Teaching has received good teaching results. Cultivate students' habits of independent learning and collaborative learning through analysis, practice, and evaluation, which has achieved the purpose of enhancing students' learning initiative and improving teaching effects (Yu, 2011).

Robert Gaye's teaching style is a mixed group teaching style that uses the theory of Behaviorism and Cognitivism are mixed. Gagne's teaching model was proposed by American psychologist Robert Gagne in the 1960s. Gagne's teaching model has been widely used in the field of education. It can be used to design and evaluate instructional courses, develop instructional strategies, develop instructional materials, and provide personalized learning guidance. This model provides a systematic approach that can help teachers organize and implement teaching according to the needs and characteristics of learners, improving learning effects and sustainability of outcomes. (Gagne,1965)

Given the above problems in many aspects, as a college teacher, you should start with mastering the objectives of the Photoshop course, and at the same time combine the teaching design (Gagne's teaching model) with the teaching method (task-based teaching method), and pay more attention to the operation of students' computers. A high degree of integration of ability and innovative ability. This paper takes the Photoshop course of Anhui Wenda University of Information Engineering freshman majoring in product design as an example, based on the theory of task-based learning and Gagne's teaching mode, explores the teaching design of task-based learning and Gagne's teaching mode in the undergraduate Photoshop course, Implement and evaluate skills and methods, improve the teaching quality of Photoshop courses, highlight the cultivation of students' innovative ability and operational ability, and stimulate their enthusiasm for learning. Furthermore, through the teaching practice, it is

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feasible to apply the task-based teaching method and Gagne's teaching model to the teaching of Photoshop courses in colleges and universities, which has certain research value.

Questions

What are the effects of implementing the Photoshop course based on task-based learning and Gagne's teaching model to improve the innovative ability of first-year students?

Objectives

To determine the effectiveness of the Photoshop course based on task-based learning and Gagne's teaching model to continuously improve the innovative ability by comparing the development of students' innovative ability after implementing with 4 times.

To compare students' satisfaction after implementing the Photoshop course based on task-based learning and Gagne's teaching model with the determined criteria at 3.51

Literature Review

task-based learning

Task-based learning originally originated in Western countries. In the 1970s, foreign experts and scholars hoped to change the teaching practice of "Yiyantang", so they began to study task-based learning continuously (Yuan, 2000). In the 1980s, Indian British linguist Prabhu first proposed task-based teaching from the perspective of English teaching in his educational book "Prospects for Second Language Teaching". In teaching practice, Prabhu designed A series of problem-solving activities that are the main part of English classroom teaching. He believes that by designing teaching activities and guiding students to complete the activities, students' English skills can be strengthened and exercised. The source of the name task-based learning is translated from "task-based approach", which is also translated as a task-based teaching method. It is a theory based on constructivism as its cornerstone. From its name, we can find that an important feature of pedagogy is "task". It turns specific, detailed, and realistic tasks into the driving force for students to actively learn, further encourages and guides them to face up to problems and complete tasks, and at this stage mobilizes their interest in learning, independent thinking, active exploration to achieve learning goals (Wu, 2022).

Gagne's teaching model

Gagne mentioned the concept of "teaching events" in his two works "Conditions of Learning and Pedagogy" and "Principles of Instructional Design". He believed that "teaching includes a set of external events designed for students. "Events that support the internal process of learning". Generally speaking, in a class, there are generally nine events corresponding to the learning process, which are collectively referred to as the "nine learning levels". Many domestic researchers have adopted this statement, such as Sheng (2006), Peng et al (2008), Zhang (2019), etc. in their research works "Expansion of Teaching Events and Teaching Strategies of Eight Types of Learning", "Gagné's Nine Learning Levels and Their New Development" and "The Application of Gagne's Nine Learning Levels in the Teaching of Graphic Design Courses in Secondary Vocational Schools" are both called "nine learning levels". The order in which these nine learning levels are presented is based on the learner's internal learning process. The order reflects a complete set of teaching processes. Therefore, some domestic learners call it the "nine learning levels". For example, Zhang (2019), Li & Ma (2019), and Liu (2017), etc. in their research papers "Application of Gagne's "Nine Learning Levels" in Scratch Teaching in Primary Schools", "Gagne's "Nine Learning Levels" and Its Localization Transformation", "Gagne's "Nine Learning Levels" and its Localization Transformation" This statement is adopted in "The Enlightenment of Nine Learning Levels on the Design of Adult Mobile Learning Resources". Gagne also emphasized that although these nine learning levels are often presented in a specific order, they do not appear in this order invariably, and not every teaching event is required in every class. In other words, the nine learning levels to a certain extent, can be said to be a set of teaching steps and procedures, but it is not entirely a set of teaching steps and procedures, but a set of events that can be changed in order and made choices based on actual teaching needs. Therefore, this study adopts Gagne's statement, called "Nine Learning Levels".

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Conceptual framework

The variables included in this study were: The independent variable is Photoshop course based on task-based learning and Gagne's teaching model. The dependent variables are Students' Innovative ability and Students' satisfaction.

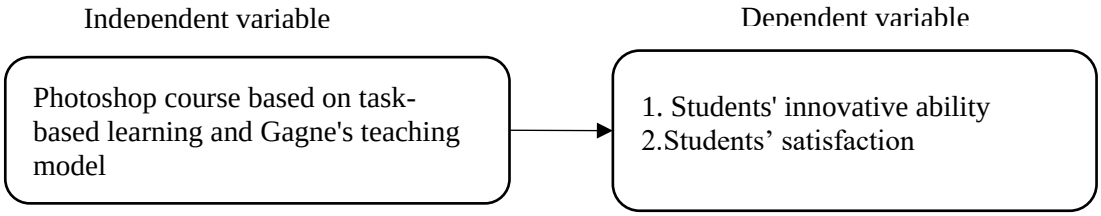

Figure1. Independent variable and dependent variables

Methodology

Population and sample

The population in this study was 157 students majoring in product design (class of 2023) at Anhui Wenda Institute of Information Engineering. The sample of this study was 37 first-year students in the class of 2023 (1 class in Anhui Wenda University of Information Engineering), derived by cluster random sampling method from a class.

Research Instruments

Research instruments were the tools for collecting data. The research instruments which were used in this study were:

Experimental instruments

1) Photoshop course based on task-based learning and Gagne's teaching model: The course included 6 components, namely (1) principles, (2) objectives, (3) content, (4) instructional strategy consisted of 3 steps and 9 teaching processes which were namely Step1: Pre-task 1.1) gaining attention 1.2) specify objective 1.3) activate prior knowledge 1.4) present new information, Step2: On task 2.1) guide learning 2.2) elicit response 2.3) provide feedback and Step3: Post task 3.1) assess performance 3.2) review and transfer, (5) media and resources (6) evaluation. Five experts evaluated the draft course, the lowest mean score was 0.6 (SD=0.548), and the highest mean score was 5(SD=0.00). It was revealed that the Photoshop course was based on task-based learning and Gagne's teaching model was at a high level.

2) Lesson plans: Five experts evaluated the eight lesson plans. According to the expert evaluation form, the lowest mean score was 4.6(SD=0.55), and the highest mean score was 5(SD=0.00). It was revealed that the lesson plan was at a high level.

Instruments for collecting data: Instruments for measuring students' innovative ability and students' satisfaction:

1) Students' innovative ability evaluation form: Students' innovative ability evaluation form had 4 components and five levels: Excellent, Good, Medium Good, Pass, and No Pass. The quality of the form is considered from the Index of Item-Objective Congruence (IOC), the result of analyzing the IOC index showed that was found that IOC was in the range from 0.8-1. The Cronbach's Alpha coefficient of reliability of the evaluation form was computed and should be more than 0.70. It was found that reliability was at SD= 0.89.

2) Students' satisfaction questionnaire; The questionnaire is provided to 5 experts for content validity check and suggestions. The quality of the questionnaire is considered according to the Index of Item Objective Congruence (IOC). The result of analyzing the IOC index is between 0.80-1.00 higher than 0.5. The Cronbach's Alpha coefficient of the reliability of the student satisfaction questionnaire is 0.98.

Data collection: The procedures of data collection were as follows:

The sample assigned to the experimental group will be taught through a Photoshop course based on task-based learning and Gagne's teaching model.

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The samples were assessed by the Photoshop Innovative ability measure before teaching.

The samples were taught by the 7 lesson plans of the Photoshop course.

After completing the taught of lessons 1-2, the sample received the first innovative ability measurement, after completing the taught of lessons 3-4, the sample received the second innovative ability measurement, after completing the taught of lessons 5-6, the sample received the third innovative ability measurement, and perform the same operations as in lesson 7. The last innovative ability measurement, sample was waiting 1 week after completion of 7 lesson plans.

After the instruction was completed, the sample was evaluated by students' satisfaction.

Data analysis: In this study, data were analyzed by using the statistical method according to the research objectives. (1) evaluate students' Innovative ability through statistical data using One-way Repeated Measures ANOVA. (2) Compare students' satisfaction after implementing the Photoshop course based on task-based learning and Gagne's teaching model with the determined criteria at 3.51 scores which were analyzed by using a t-test for one sample.

Results

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

1. The finding of the result of comparing the development of students' innovative ability after implementing with 4 times.

Table 1 The result of the analysis of variance with repeated measures was used to compare the difference between the mean score of innovative ability four times.

Source	SS	df	MS	F	Sig.
Time	22860.723	2.224	10281.290	251.830	.000
Error	3268.027	80.047	40.826		
Mauchly's Test of Sphericity=0.613, Chi-Square=16.982, df=5, Sig.=0.005					

As presented in Table 1 Mauchly's test indicated that the assumption of sphericity had been violated, $x^2(5) = 16.982, p = 0.005$, therefore degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity (0.613). It was presented that there were significant differences in the mean scores of students' innovative ability 4 times at least 1 pair difference (F=251.830, p<0.001), presented in Table

Table 2 The result of the comparison of differences in mean scores of students' innovative ability in 4 times (n = 37)

	Comparison difference in innovative ability			
Time	Time1	Time2	Time3	Time4
Time1		10.757*	23.405*	32.784*
Time2			12.649*	22.027*
Time3				9.378*
Time4				

*p = <.05

From the table, there was a significant difference between each pair of time points, and the mean scores of students' innovative ability were made by Pairwise comparisons. The mean score of students' innovative ability the 1st time was significantly lower than in the 2nd time, the 3rd time, the 4th time, and the 2nd time was significantly lower than the 3rd time, the 4th time, and 3rd time was significantly lower than the 4th time at the.05 level. As presented in Figure 1-2 The comparison of differences in mean scores of innovative abilities the 1st time, the 2nd time, the 3rd time, and the 4th time.

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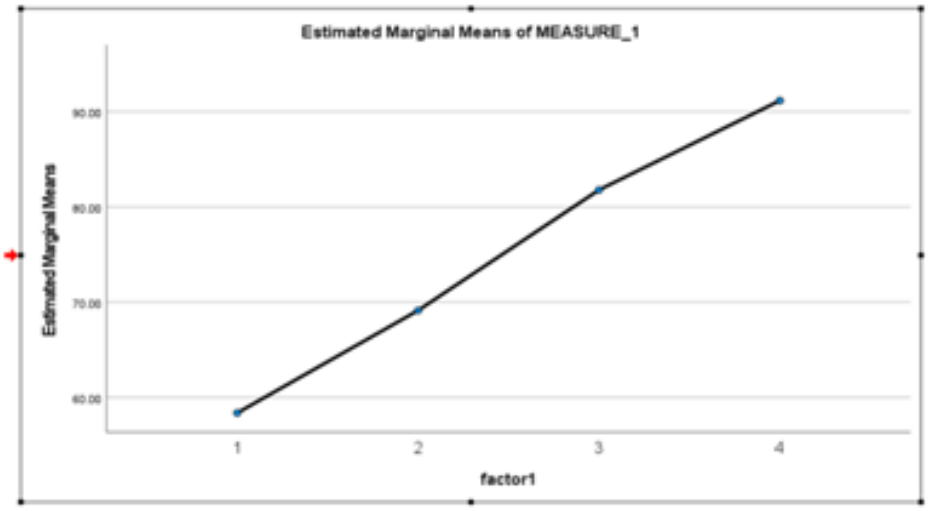

Figure 2 The comparison of differences in mean scores of innovative abilities the 1st time, the 2nd time, the 3rd time, the 4th time

2. The finding of the comparison of students' satisfaction after learning through the Development of Photoshop course based on task-based learning and Gagne's teaching model process with the criteria set at 3.51 scores which were analyzed by using a t-test for one sample was presented in the below table. This table aimed to answer the research objective about whether students are satisfied after learning through the Photoshop course process.

Table 3 The finding comparing the different scores of students' satisfaction after learning through the Photoshop course based on task-based learning and Gagne's teaching model process with the criteria set at 3.51 scores

Group	N	Full score	Criteria score	Mean	SD
Experimental group	37	5	3.51	4.36	0.23

*p<.05

As presented in Table 3, the mean scores of 37 students' satisfaction after learning through the Photoshop course was higher than the criteria set at 3.51 scores at.05 level of statistical significance (t= 97.4, p<.05).

Discussion

Previous research is discussed below:

The construction of the draft teaching model is based on Piaget's constructivist learning theory (1966) and Dewey's pragmatism theory (1925). Piaget's constructivist learning theory emphasizes that knowledge is a process in which students actively construct through interaction with the external environment. Dewey's Pragmatism theory emphasizes that knowledge is education as life, school as a society, and learning by doing. Vygotsky's (1978) zone of proximal development theory students have two development levels: one is the student's current level, that is, independent problem-solving, and the other is the potential development level of students, which refers to the level of problem-solving under the guidance of adults or the help of more capable peers. In teaching, it is the potential gained through teaching. The draft teaching model developed was evaluated by five experts for the appropriateness of each component of the teaching model before implementation. The results of the study indicated that the teaching model was appropriate at a high level, with an average score of 4.50 for the appropriateness level.

1) The research results show that the average scores of college students' innovation ability at the 1st, 2nd, 3rd, and 4th times are significantly different at the statistical significance level of 0.05, and

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they increase in order. The results of this study are consistent with the research of Gao (2022). As a method of imparting knowledge based on the constructivist system, task-based learning takes into account the learner's existing knowledge structure, especially in terms of task setting. Value the generation of knowledge. Task-driven teaching is driven by completing tasks, prompting learners to actively complete tasks, thereby motivating students to have learning autonomy. Let learners complete the generation of new knowledge in the process of completing tasks, and teachers play the role of promoting and guiding students' learning in this process. This teaching method emphasizes the setting of tasks. It requires that the tasks set should be included in the student's zone of proximal development and can effectively stimulate students' enthusiasm for exploring knowledge and improve students' innovation ability and awareness. The task of exploring knowledge is hidden, so that students can actively acquire knowledge and complete the self-construction of knowledge. The results of this study are consistent with Guo Siping's research.

In "Gagné's Information Processing Learning Theory and its Teaching Model—Also on the Enlightenment for Modern Teaching", by sorting out the origin and development of the learning theory, an in-depth analysis of the teaching proposed by Gagne Views and learning theory, based on the information processing model she constructed, she analyzed and summarized the inspiration of modern teaching. She believes that: before teaching, teachers should stimulate students to recall the knowledge and abilities they have acquired, attract students' attention and inform students of Learning objectives, organize the presentation of knowledge during the teaching process, and be prepared to provide timely feedback to students. Zhang & Gu (2004) agree with the research and believe that for innovative capabilities, it is one-sided to only focus on innovative thinking and innovative personality, and the important role played by knowledge, skills, internal motivation, and other factors in the development of innovative capabilities should not be ignored. Ayman Bell once pointed out that domain-related skills and internal motivation are necessary and sufficient conditions for any creative activities and creative products. This result is consistent with the research of Zhai (2018), who believes that innovation capability is the result of the mutual influence of capabilities, processes, and environment, and is the unified perception of novelty and usefulness produced by people or groups in a certain social context. That is not to say that different ideas can be called innovations. The ideas must be considered in a certain environment, whether these ideas can solve actual problems, and what new tools and tools will be used in the process of solving problems. Methods etc. This is consistent with the study by Xia (2021) et al. First of all, it should be recognized that every student has his innovative ability. Their new understanding and new ideas about one thing are innovations. Innovation is not unique to a few people and can be cultivated. Secondly, we should focus on developing innovation in the learning process. abilities and the innovative ability to solve daily life problems; finally, although the focus is not on developing innovative abilities in students' professional fields, students should also be allowed to simulate and experience the process of creative problem-solving in the field. The teaching model designed in this study aims to allow learners to construct their knowledge through inquiry based on task-based learning and Gagne's teaching model. When students face problems or challenges, they can propose novel, unique, and effective solutions or synthesis of ideas. Behavior. They can make connections between previous experiences and new experiences themselves, allowing them to participate in learning, learn by doing, learn in collaboration, and interact with others. Practice can promote students' innovative abilities.

2) The research results show that the average satisfaction score after adopting

Photoshop course based on task-based learning and Gagne's teaching model is at a high level of >3.51 (M=4.36, SD=0.23), which means that the developed teaching model has good results and quality. The results of this study are consistent with the study of Bothaina et al. (2018). Students' awareness of the academic and social environment, awareness of the use of campus resources, and sense of belonging are positively related to students' overall satisfaction. The research results of some scholars show that a very important factor affecting student satisfaction is "whether the school pays attention to the students themselves." Therefore, as a provider of higher education, schools should not only play the role of good service providers but also implement the "people-oriented" educational concept in development practice. The results of this study are consistent with the research of Huang and Guo

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(2016), which emphasizes the role of schools as "service providers" and ignores the nature of schools as education providers. Its research found that in 2014, college students across the country found that their growth and harvest satisfaction were at a medium level, and cognitive development and interpersonal relationships were the key factors affecting their satisfaction. Zhang & Yue (2009) divided student satisfaction evaluation indicators into two categories, namely "teaching process" and "non-teaching process". The research results found that "process" significantly affects the "results" of student satisfaction evaluation. Xing and Deng (2017) analyzed the questionnaires of 5,000 "985" efficient students and found that in teaching behavior, the factor of "organizing and imparting teaching content" significantly affects student satisfaction. Wen (2018) used multiple regression analysis of data collected from the 2015 "National College Student Academic Survey (NCSS)" and found that student satisfaction is more affected by "human factors" than "material factors". Weerasinghe and Fernando (2018) conducted a study on Sri Lanka Survey results from several universities to show that academic level and the quality of administrators have no significant impact on academic satisfaction, but are mainly affected by the school's facilities, course quality, and the school's image. Elliott's (2022) survey results show that "student-centeredness", "campus atmosphere" and "teaching effectiveness" have a great impact on students' satisfaction with the overall educational experience. The research results support the development of task-based learning and Gagne's teaching model, which allows students to have the opportunity to construct their knowledge by performing tasks, solving tasks, and completing tasks, and improving their innovation ability through task driving.

Conclusion

By constructing the Development of Photoshop course based on task-based learning and Gagne's teaching model, students can improve their innovation ability and course satisfaction under the guidance of new teaching methods and teaching plans.

Through the Development of a Photoshop course based on task-based learning and Gagne's teaching model, the first-year students majoring in product design at the Anhui Wenda University of Information Engineering were tested for the first time after completing 1-2 lessons. After completing 3 -After teaching lesson 4, the sample undergoes the second innovation ability measurement. After completing the teaching of lessons 5-6, the sample undergoes the third innovation ability measurement and performs the same operation as in lesson 7. After the fourth innovation capability measurement is completed, the samples will wait for 1 week. After analyzing innovation ability, it was found that students' innovation ability showed an increasing trend for the first, second, third, and fourth times, and the increase between the second and third times was significantly higher than that between the first and third times. Between the second time and between the third and fourth time. Therefore, it is feasible to open a Photoshop course based on task-based learning and Gagne's teaching model, which will help improve the innovation ability of first-year students at Anhui Wenda University of Information Engineering.

Therefore, the development of Photoshop courses based on task-based learning and Gagne's teaching model is conducive to improving students' innovation ability and student satisfaction, and the effect is obvious. In the Photoshop course, which is based on task-based learning and Gagne's teaching model, students are fully mobilized to be proactive and improve their innovative abilities, thereby developing a sense of innovation and benefiting students throughout their lives.

Recommendation

Recommendation for implication

1) Before introducing courses into the classroom, teachers should first study the courses and course documents, such as course plans, teaching materials, etc., to make teaching more effective.

2) Teachers should study models for using teaching techniques, such as cooperative learning, group discussions, task solving, task teaching, etc., to explain to students, the guidance on how to conduct learning activities before the learning activities begin.

3) Teachers should know how to prepare teaching materials before using teaching methods based on task-based learning and Gagne's teaching model.

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4) Teachers should encourage students to express their ideas and take advantage of social interactions. Make them innovative and good at communication and communication.

5) Teachers should research authentic assessment and how to evaluate student learning. In addition, teachers should adopt authentic and diverse evaluation methods. This assessment is effective and allows for a better assessment of student learning performance.

6) At the same time, expanding the application scope of the teaching model and collecting more data to support the Photoshop course based on task-based learning and Gagne's teaching model can well improve students' innovative ability and verify the effectiveness of the teaching model.

Recommendation for further research

1) Based on task-based learning and Gagne's teaching model The teaching model is the core of learning reform. Therefore, we should study how to use tasks to enable students to effectively carry out autonomous learning teaching models, thereby cultivating students' innovative abilities and improving their satisfaction. This study established the development of a Photoshop course based on task-based learning and Gagne's teaching model. But there is still much scientific knowledge to be developed.

2) Based on task-based learning and Gagne's teaching model an important principle of the teaching model is to maximize students' learning initiative. This study should provide students with more options for teaching techniques. Therefore, it is necessary to study the use of other teaching techniques to cultivate scientific learning outcomes and learning skills.

3) Teachers play an important role in the teaching process. Therefore, teachers should be encouraged to participate in the design of teaching models and support teachers in developing autonomous learning teaching models. Therefore, the development of teaching models based on task-based learning and Gagne's teaching model focuses on teachers' participation in the design of the teaching model.

4) Cultivating innovative abilities is the core goal of Photoshop course reform. Therefore, researchers should focus on developing "student-centered" based on task-based learning and Gagne's teaching model to cultivate students' innovative abilities. In this study, the researchers developed based on task-based learning and Gagne's teaching model to improve students' innovative abilities. However, there are many other potential ways to improve students' innovative abilities that deserve development and research.

5) Curriculum is the carrier of educational and teaching activities and an important way to achieve teaching goals. It can be seen that the construction and development of the Photoshop course system is an important channel to improve innovation capabilities. Therefore, it is very necessary and critical to continue to carry out research in the field of Photoshop course development and improve students' innovative abilities.

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