

Article

Effects of Using Task-Driven Classroom Teaching on Students' Learning Attitudes and Learning Effectiveness in an Information Technology Course

He-Hai Liu ¹ and Yu-Sheng Su ^{2,*}

¹ College of Education Science, Anhui Normal University, Wuhu 241002, Anhui Province, China; liuhehai1997@163.com

² Department of Computer Science & Information Engineering/Research Center for Advanced Science and Technology, National Central University, Taoyuan City 32001, Taiwan

* Correspondence: addison@csie.ncu.edu.tw

Received: 24 September 2018; Accepted: 29 October 2018; Published: 31 October 2018



Abstract: The Internet era of the modern day means that information technology no longer depends on computer theory. Instead, new education methods are used for innovative application. Therefore, the task-driven classroom teaching method is integrated into information technology teaching of junior middle school by designing specific cases. From the theoretical knowledge teaching and the comprehensive operational practice teaching, we explore the effect of using the task-driven classroom learning method on students' learning attitudes and learning effectiveness in an information technology course. The experimental results show that using the task-driven classroom teaching method has significant positive correlation on student learning performance, learning interest, and creative thinking. This idea can stimulate interest in learning and improve the comprehensive quality of students; thus, it can promote the reform of information technology education and curriculums. For a more detailed discussion, the results will be discussed in this paper.

Keywords: task-driven classroom teaching; learning performance; information technology course

1. Introduction

The task-driven classroom teaching method originates from the teaching concept of student center. This movement is called learning from doing and it was put forward by American educator John Dewey with pragmatism as the basis of education theory [1]. John Dewey sees the education process as the process of doing and suggests that it is doing by ourselves that enables us to gain experience. With knowledge, we have experience, and we have the unity of knowledge and practice. Achieving learning from doing, teachers should adopt problem-based learning methods and guide students to ask questions and think of questions [2,3]. The task-driven classroom teaching method is gradually produced and perfected under this demand.

Past studies found a draft guidance on accelerating the construction of information technology curriculum for primary and secondary Schools [4,5]. The task of taking information technology courses in primary and secondary schools is stimulating students' learning interests and attitude, so that the teachers can understand and master the basic knowledge and skills of information technology. Students can make full use of information technology to solve the problem, which would also boost their ability to think innovatively. They do not cling to outdated customs and develop a good artistic appreciation of information technology [6].

1.1. Connotation of the Task-Driven Method

The task-driven classroom teaching method is based on the constructivism learning theory. It transfers the traditional teaching concept of knowledge into a problem-solving-oriented interactive teaching mode [7]. As this task serves as the main line, students are the main and the subjective part. It changes how the relationship between teacher and students; in the past, one would lecture while the other would merely listen and passively accept. The task-driven classroom teaching method is conducive to stimulating students' learning interest and improve students' ability to solve problems [2]. The task-driven classroom teaching method can be applied to information technology courses. Students need to use different perspectives under different approaches to design and implement multiple tasks and form a large task experimental framework [4,8].

On the one hand, the task-driven method is a classroom teaching theory that asks teachers to change from the traditional knowledge-based teaching methods. It makes the students complete their tasks under the guidance of the teacher. The teaching model based on solving problems makes the students learn actively. Each student has their own understanding of the problem, and discusses with classmates and shares the most effective way to solve the problem [7]; on the other hand, the task-driven method is driven by the completion of the task, which was contributed by teachers to help students form active self-exploration skills and achieve active application around a common task center [9]. The task-driven method focuses on task-structured, task decomposition and task lifeization processes. Task-structuring means integrating learning with the course content and closely. Task decomposition means that the learning process of students will be decomposed step by step according to the requirements of tasks, and it is refined gradually. The task is approached from big to small, then from small to detailed. Task lifeization means the combination of students' study and life enables students to complete tasks better.

1.2. Models of the Task-Driven Method

Generally speaking, there are three basic models in the task-driven classroom teaching method [4,5,8], namely the task-oriented model, teacher-oriented model, and student-centered model. The task-oriented model refers to the whole teaching activity focusing on the task design. The teaching activities are expanded by the task, and the task serves as a link between teachers and students. As for teacher-oriented, it means that teachers are the designers of learning tasks. The way abides following several principles about designing tasks. The assignment and the level of difficulty should be reasonable. The teacher-oriented method has enough attraction to students, and there is an important influence on students' learning attitude towards the completion of their learning tasks. According to the students' learning characteristics, the suitable learning tasks should be designed to be student-centered, in which students pay full attention to subjective initiative. Students should actively participate in practical activities and cooperate with classmates. The student-centered method helps students acquire knowledge and increases the students' ability to learn. Moreover, students are expected to be more enthusiastic in their work. In the process of completing tasks, students can actively search and analyze relevant learning resources and information, then formulate a series of strategies to solve the problem, and ultimately find a best solution through continuous effort [10]. The reason why we focus on teaching is to cultivate students' creative spirit and creative ability, and also to reflect student's subjectivity. Students should do more than integrating old and new knowledge, they are also expected to integrate the knowledge from all aspects of life. Comprehensive thinking skills transfers the learned knowledge to other subjects, which deepens personal understanding, and thus creative thinking and the ability to deal with problems comprehensively are formed [8].

1.3. Research Purpose

In this paper, we integrate the task-driven classroom teaching method into information technology courses. The idea can help the teacher and students work around a common task activity center [11].

According to the learning motivation of completing the task, students are encouraged to study actively by themselves [5,12]. Moreover, in the task-driven teaching method, students have a good grasp of the learning objective and the whole teaching situation. The task-driven teaching method asks the students to do a clear task, and guide them to carry out research and practice, and thus forms the ability of completing the task. According to the task, in the process of learning progress, students' sense of accomplishment is cumulative. While improving students' learning attitude, students independently develop their learning activities, and gradually cultivate students' independent exploration and independent learning ability. Therefore, the task-driven classroom teaching method is adopted in the information technology course to explore whether the task-driven classroom teaching method can help improve the educational quality of information technology courses, ecological study, and learning achievements.

According to the John Dewey's education theory [1], the "learning by doing" approach takes the students as the learning task center. Compared with traditional teaching, it is helpful to mobilize students' learning enthusiasm and get them to participate in the process of teaching and learning, therefore it promotes the integration of the curriculum and fits today's STEM (Science, Technology, Engineering and Mathematics) education thought [13–18]. In the task-driven classroom teaching method, we construct suitable learning tasks, measures, requirements, learning environment and conditions, and these guide students to find the best way to solve the problem [7]. In this process, students are the core of the whole process of teaching as subjects of the activities. Students participate or collaborate in a personal or group form. In this way, the students can fully mobilize the enthusiasm of audio-visual and thinking. Letting students use their hands, brain, mouth, and eyes simultaneously, realize immersion learning, and complete a passive to active transformation. In addition, the students' understanding and application ability of the computer has also been greatly improved. It also meets the requirements of cultivating students' core qualities, not only learning knowledge, but also learning how to acquire knowledge by themselves, thereby it comprehensively promotes students' learning attitude and performance.

The remainder of this paper is organized. Methodology and research hypotheses are presented in Section 2. In Section 3, we report the results of this study. The implications of the results are discussed in Section 4.

2. Methodology

2.1. Participants

In this experiment, we select students from the experimental class and the control class of grade 7 at a Middle School. There are about 50 people in each class. According to statistics, the proportion of the experimental class boys (68%) and the control class boys (60%) is higher than the girls.

2.2. Hypotheses

The experimental class has the same number of students as the control class. There are two differences between two classes about the information technology learning interests at junior middle school, knowledge mastery, and initial level generally. Students from two classes adopt the same junior middle school information technology textbook, and are carried out the teaching activities by the same teacher. They have same teaching hours, and the teacher adopts task-driven classroom teaching method to the experimental class, while the teacher adopts traditional teaching method to the control class. We explore two groups teaching effectiveness, the educational quality, and so on through the final result of information technology, the questionnaire feedback, and the expert interview. Therefore, we propose three research hypotheses, as follows.

Hypothesis 1 (H1): *Students' learning attitude is significantly improved under using the task-driven classroom teaching method thus improving the learning atmosphere, the learning effect, and the completion of teaching.*

Hypothesis 2 (H2): *Through using the task-driven classroom teaching method, the teacher can help students master information technology knowledge more effectively.*

Hypothesis 3 (H3): *Through using the task-driven classroom teaching method, the teacher encourages students to communicate and cooperate. The teacher and the student discuss about difficult problems. This can improve the student's language expression ability, the collaboration ability, and the comprehensive quality.*

Being set independently, the variables in this experiment are the experimental class and the control class. The two classes have similar scores and abilities. In the experimental class, the teacher adopts the task-driven classroom teaching method while the traditional teaching method is applied to the control class. According to all students' background survey, students in two classes have some understanding of information technology, but the level of understanding is not deep enough. They are very interested in this course. However, most students are not satisfied with the current teaching status of information technology courses.

The two classes of students have the same degree of initial mastery of the information technology course. Students' learning ability and comprehensive ability are the same. In school, we provide the same information technology course hardware conditions for all students. The teacher has the same teaching attitude. Interference factors may also occur during the experiment. For example, students have adverse reactions to the teacher's teaching content and teaching methods. Information technology courses can be affected by hardware problems, the teaching standards, the emotional state of teachers and so on.

2.3. Learning Materials

In the experiment, the information technology syllabus requirements are added as one of the evaluation criterion, and the information technology course design contains educational objectives to be completed.

The experimental class and the control class adopt learning materials of information technology, and we select the modification of PowerPoint self-selecting graphs. Students need to master the relevant operation of the PowerPoint information processing. We focus on studying according to getting information, selecting information processing, using information scientifically, and creatively managing and accessing information.

When designing a homework (task), referring to scene design, different students may have different understandings of the homework that the teacher puts forward. The link is the key between the teacher and students to enhance communication. By knowing the students' understanding of the classroom homework, the teacher guides the students to complete the tasks according to the requirements. The students' thinking and comprehensive ability are well trained. We choose the slide making as the teaching practice content. The main purpose of the course is to enable students to master the methods of producing electronic newspapers with slides, and to have a better understanding of PowerPoint word processing and image processing. In Table 1, the homework should be broken down, and students complete the steps according to the steps. This makes it easier to do tasks and make students more confident when completing the work.

Table 1. Designing learning materials for learning activities.

Steps	Teachers	Students	Educational Objectives
1. Use your optional graphs to make slides	The teacher uses the optional graphs to layout and decoration. If finished the oval picture, the teacher adds the picture of the rotating decoration frame, the line with the pattern, and so on.	Students observe the teacher's operation. Students perform their observations on the stage.	The step gets intuitive understanding and feeling, and they master the filling and line setting of the geometric figure. In addition, students insert special picture and line drawing.
2. Guide students to think	The teacher uses the drawing tool to teach drawing properties, which contain optional graphs slips, stacked sequence, alignment and layout, combination, etc.	Students summarize the learning content. Students compare the answer. The teacher lectures on demand. Students observe some operations.	The step guides students to know the difference between the image and the insert picture. Students learn how to rotate, the drawing property of the flip, and the drawing property of the stacked sequence. Students learn the drawing properties of the alignment and combination of the optional graphs.
3. Team work to complete the classroom task.	How to rotate image about rotate frame, such as slip, stacked sequence, etc. How the squares are concentric and multiple, such as alignment, combination, etc.	Students operate autonomously and the group accomplishes tasks together.	The step can promote students to analyze problems, solve problems, and improve teamwork spirit.
4. Preservation of files	The graphic layout on the slide is modified based on the theme text and the photo combination, and creates a reasonable layout, slide show. Students organize subtitles, make slides, learn PowerPoint custom graphs, slide layout, and summarize team results.	Students operate independently and cooperate to complete the classroom task. The teacher feedbacks students' mutual evaluation and self-assessment.	In the step, students understand the common sense of electronic newspaper production. Cultivate students' ability to acquire information, apply and process information. The ability to organizing the information of electronic publications.

2.4. Task-Driven Classroom Teaching

For teaching the information technology course, we need to be close to students' life design, the task-driven classroom teaching method and homework [6,8]. The teaching method pays full consideration to the students' knowledge and ability, and it combines with the necessity and practicability of the teaching content. For the cases of students' problems, it can decentralize students thinking well through linking with students' practice, and it can mobilize students' initiative. For example, for the dynamic part of the chapter on the demo software in the basic knowledge of information technology, the teacher can make presentations by making slides. This has a good transition effect by adding a lot of colorful pictures and dynamic text, then assigns homework. The task-driven classroom teaching method is as follows:

Firstly, the students study in groups to complete the "Merry Christmas" demonstration of dynamic effects editing and show excellent tasks.

Secondly, the reasonable decomposition task can reduce the learning difficulty, and the teacher guides students to build a knowledge system.

Thirdly, the students applied "learning by doing", and the content and learning complete as well, collaboratively. The teacher guides the students to participate in the learning process by means of independent learning and cooperative learning. For example, the spreadsheet processing in the Basic Knowledge of Information Technology, the teacher can arrange the student to complete the "student report card" calculation for purposes of processing data calculation and sequence.

Fourthly, the teacher encourages students to explore, experiment boldly, observe mainly, counsel individually or demonstrate, and let students learn to use subjective initiative and creativity. It cultivates and improves students' comprehensive ability.

Lastly, the task evaluation increases students' learning motivation. The task assessment is an effective way for students to learn. In the normal course of teaching, the use of flexible evaluation tables can motivate and guide students to learn and develop their information literacy.

In the teaching method, we plan to stimulate students' interest in learning. Furthermore, we guide students to think about the solution to the problem, finish the task well, and learn new knowledge. Finally, the teacher summarizes the tasks completed by the students, and the key points that students need to master are the results of the evaluations from the teacher, the group, and inside the group (peer to peer evaluation). So far for sure, this deepens the understanding and memory of the teaching content.

2.5. Experimental Procedures

The purpose of the study is supporting the integration of learning content and information, as it is expected to assist the development of knowledge, abilities, and the highest level of thinking. The experiment procedure is shown in Figure 1. The procedure can be seen from the above flowchart, the teaching process in the task-driven model is a two-way interactive process. The process focuses on students' independent thinking, group discussion, hands-on operation, and so on. The process makes the teaching process richer and more interesting. Students can integrate the teaching process better and trigger the enthusiasm of learning.

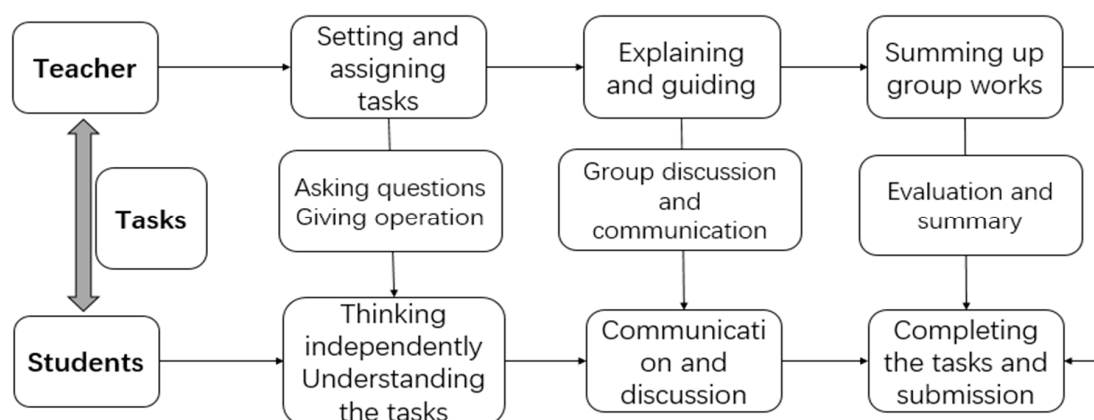


Figure 1. Experimental procedure flowchart.

2.5.1. The Control Class Teaching Mode

The control class is taught in the traditional teaching mode, such as with the teacher lecturing and students listening. Firstly, the teacher leads students to learn theoretical knowledge, and students have a certain understanding of the actual operation by case presentation. Through the case demonstration, students have a certain understanding of the actual operation. Then, the teacher uses the task-driven classroom teaching method to assign the homework task. Students complete the drill according to the requirements. Finally, students are divided into several groups, and discuss task division, creative design and summary communication within the group.

2.5.2. The Experimental Class Teaching Mode

The experimental class is conducted in the online classroom, and such lecture is constructed in a task-driven classroom teaching with multimedia. The teacher selects some excellent "electronic newspaper" of slide format as the excellent works to display. In works display link, it can motivate students' enthusiasm for learning and arouse their interest in learning. On the other hand, we can set a good example for students and provide guidance in hands-on practice.

After the appreciation of excellent works, students' interest is stimulated to understand good works and goals. This stage formally introduces the designed teaching task and then demonstrates the basic operation of PowerPoint to the students. The basic principle of this link is to give students a general understanding and impression of the learning task, and guide students to analyze and master skills in the demonstration, such as the layout of decoration, decoration and control of the slide, the definition of custom graphs and how to use custom graphics to modify slides, and PPT beautification and processing.

At this stage, the teacher explained and demonstrated the operating methods, then listed the "learning task list" on the PPT, so that the students could grasp the following schedule. The time control is set at 5 min, while avoiding spending a lot of time on this link.

Firstly, we divide students into different groups for of 5 people per group. According to their own interests and talents, students can choose how to learn in their own free will, and the teacher adjusts appropriately so that each student can master the knowledge. According to the teaching steps in Table 1 to conduct classroom experiments, teachers emphasize specific tasks at the beginning of each step and give guidance and demonstration operations. Secondly, each team leader sets up the implementation plan in each group and puts it into practice. The teacher encourages the students to take the stage to demonstrate the progress of each group's operation and to communicate and discuss. Thirdly, each team leader sets up the implementation plan in each group and puts it into practice. The teacher encourages the students to take the stage to demonstrate the progress of each group's operation and to communicate and discuss.

The teacher should pay attention to the active classroom atmosphere and make it easier for students to participate in the task-driven classroom teaching process. The duration of the session is 35 min. The whole process is divided into four parts: "making slides with self-selected graphs", "guiding students to think", "working together to complete tasks" and "saving documents". Teaching steps is completed. At the same time, the teacher pays attention to the acceptability of students in each link in the teaching process and guide students to participate in speech actively.

Each student, according to the division of labor of the group, seeks the material to complete the homework of group and review each other based on goal of the homework. Students can communicate with each other, select several excellent teams to show their design ideas and share their design results with others. Then, the teacher explains, analyzes and guides the evaluation. The group explores with each other, learns from each other and improves their works constantly.

2.6. Instruments

This paper is based on the information technology post-test results of two classes of students. Moreover, two groups of students are analyzed to evaluate the teaching effectiveness of the information technology course, and evaluate whether to adopt the value of the task-driven classroom teaching method.

This paper designs the learning attitude scale. All students in the two classes are surveyed by the learning attitude questionnaire of the information technology course, and the questionnaire is answered anonymously. In this paper, we design an experimental questionnaire to understand students' learning attitude towards information technology courses and their knowledge. There are 10 multiple-choice questions in the questionnaire [17]. Each choice is based on students' knowledge of information technology and the development of attitude. In order to ensure the reliability of the questionnaire, before the investigation, the reliability coefficients and correlation coefficient of the questionnaire were analyzed. The reliability value of the questionnaire is 0.83. A Cronbach's alpha coefficient of 0.6 and above is a desirable reliability coefficient. The size of this value meets the standard questionnaire, which indicates that the questionnaire is reliable and representative.

Based on the students' evaluations of educational quality (SEEQ) questionnaire designed by Australian education psychological experts Marsh [19], we can accurately measure the teaching level of subjects. As shown in Table 2, the SEEQ questionnaire designed in this paper is divided into seven parts,

namely the breadth of knowledge, teaching enthusiasm, teacher's personality characteristics, teaching management, learning value emotion, and group interaction. The difficulty of functional scale is about measuring the difficulty of teaching. Each option was assigned by a certain standard with a total of 30 points. The breadth of knowledge mainly analyzes students' judgment on their own learning ability from three aspects: The degree of students' mastery of computer program, knowledge expansion and the improvement of computer technology. Teaching enthusiasm, teacher's personality characteristics, and teaching management are set to reflect the students' responses to the teacher, and these items force the teacher to use a different teaching method to accept the degree. Teacher's enthusiasm is considered based on three aspects: Students' recognition of information courses, the degree of cooperation in class, and completion of students' homework. Teaching management is about considering the influence of teaching contents. Learning value emotion and group interaction are connected to showing whether students can improve their comprehensive quality and ability through different teaching methods. The learning value emotion is analyzed from whether students can acquire valuable knowledge and whether they can improve their interest in the course. Group interaction analyzes the improvement of students' comprehensive analysis ability from their own feedbacks. The difficulty of functional scale is that it measures teachers' difficulties in teaching from three aspects: the completion of classroom teaching goals, classroom teaching efficiency and classroom difficulty.

Table 2. The dimensions and items of the students' evaluations of educational quality (SEEQ) questionnaire.

Dimension	Item
The width of the knowledge	1. The degree of mastery of computer procedural knowledge. (2 points)
	2. The degree of mastery of computer expands knowledge. (1 point)
	3. Computer skills upgrade. (2 points)
Teaching enthusiasm	1. Students' enthusiasm for information technology courses. (2 points)
	2. The degree of student cooperation with teachers in class. (2 points)
	3. Completion of student work. (1 point)
Teacher's personality characteristics	1. The teachers' teaching is more interesting. (2 points)
	2. Teachers are more accessible to students. (1 point)
Learning value emotion	1. Students learn more valuable knowledge by exploring. (2 points)
	2. Increase interest in the course through teacher teaching. (2 points)
Teaching management	1. Teaching content can help students to improve their operating ability. (2 points)
	2. The practical content conforms to the teaching goal. (1 point)
Group interaction	1. Encourage students to ask questions and give students meaningful answers. (2 points)
	2. Encourage students to express their original views and come up with questions. (1 point)
	3. "Teachers-students" and "students-students" participate actively in class discussions. (2 points)
Difficulty of homework scale	1. Completion of classroom teaching objectives. (2 points)
	2. Classroom teaching efficiency. (2 points)
	3. Complexity of classroom teaching. (1 point)

3. Results

3.1. Learning Achievements

After the teaching task, the teacher uses the same information technology test to assess the knowledge of two classes, and statistic students' examination result and carries on analysis. The learning test is divided into five parts, which contain basic knowledge, optional graphs, word processing, graphs processing, and format attributes. The proportion of each part in students' learning achievements is shown in Table 3.

Table 3. Descriptive data results of students' learning achievements.

Group	Basic Knowledge	Optional Graphs	Word Processing	Picture Processing	Format Attributes of Graphic Line	Average of Total Points
Experimental class	27	18	13	23	9	90
Control class	27	16	12	19	8	82

We can be seen from Table 3, information technology course of the unit emphasizes basic knowledge, graphs processing and optional graphs. It mainly investigates whether students master the knowledge of PowerPoint graphics processing. According to the results, the SPSS (IBM Armonk, NY) software is used to analyze the sample data of the experimental class and the control class. According to the above analysis, the average of the experimental class is 90, while the average of the control class is 82. Comparing the knowledge points of the two classes, it seems like the control class and the experimental class have certain differences in the experimental results.

In Table 3, there is a gap between the experimental class and the control class on the total scores and the mean of knowledge points in each part. The overall result of the experimental class is obviously better than the control class. The score of basic knowledge is the same. In terms of application testing, the experimental class had a much higher score than the control class. This shows that explained that task-driven classroom teaching can effectively improve students' understanding of applied knowledge and memory, and it is easier to solve the problems of divergence and comprehensiveness.

3.2. Learning Attitudes

In the study, we collect all questionnaires, organize the students according to the score, and get the specific score of each questionnaire. We apply the *t*-test analysis method. *t* statistic tests the probability that something happens according to *t* distribution theory, and compares the average size of the two sets of data. Unilateral *t*-test is the significance level through the difference between the mean of a sample and the mean of a given population. Bilateral *t*-test is analyzed by two groups of unrelated sample data.

From Figure 2, it is clear that students who score between eight and fourteen are the most among the 50 students in the experimental class. The average of students' attitude to information technology is 10.67, and the standard deviation is 2.677. On the other hand, as can be seen from Figure 3 the average score of 50 students in the control class is 9.95, and the standard deviation is 5.086. Through horizontal coordinates, the learning attitude questionnaire scores of the experimental class are found to be between 7 and 14. There are almost no questionnaire scores below 6. As can be seen from Figures 2 and 3, the experimental class is better at accepting information technology than the students in the control class.

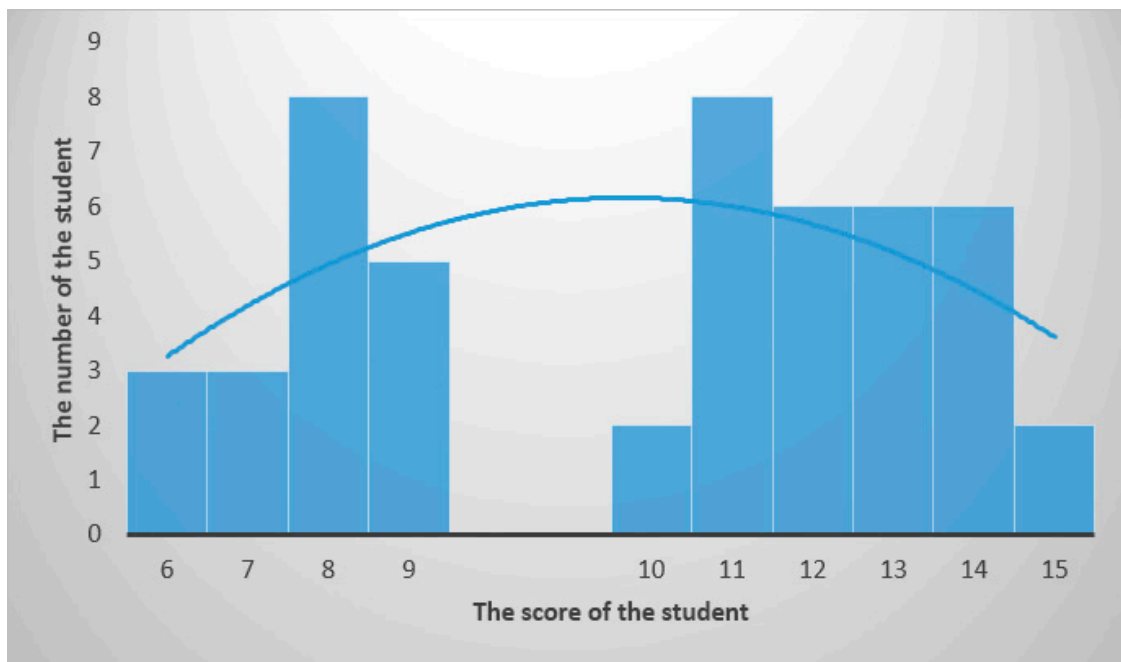


Figure 2. The result of the learning attitude for the experimental class.

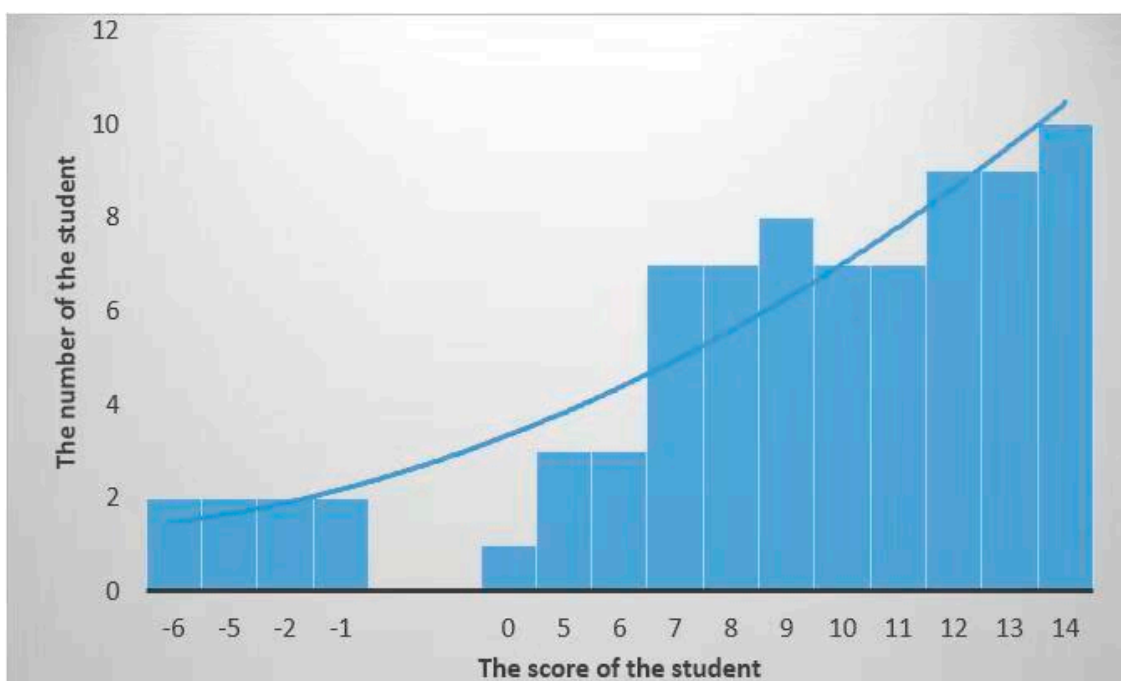


Figure 3. The result of the learning attitude for the control class.

3.3. Students' Evaluations of Educational Quality (SEEQ) Teaching Evaluation Effect

After the experiment, two classes of students are asked to complete the SEEQ evaluation survey and analysis. Through the SEEQ evaluation analysis, the task-driven classroom teaching method has an impact on teaching quality, as is shown in Figure 4.

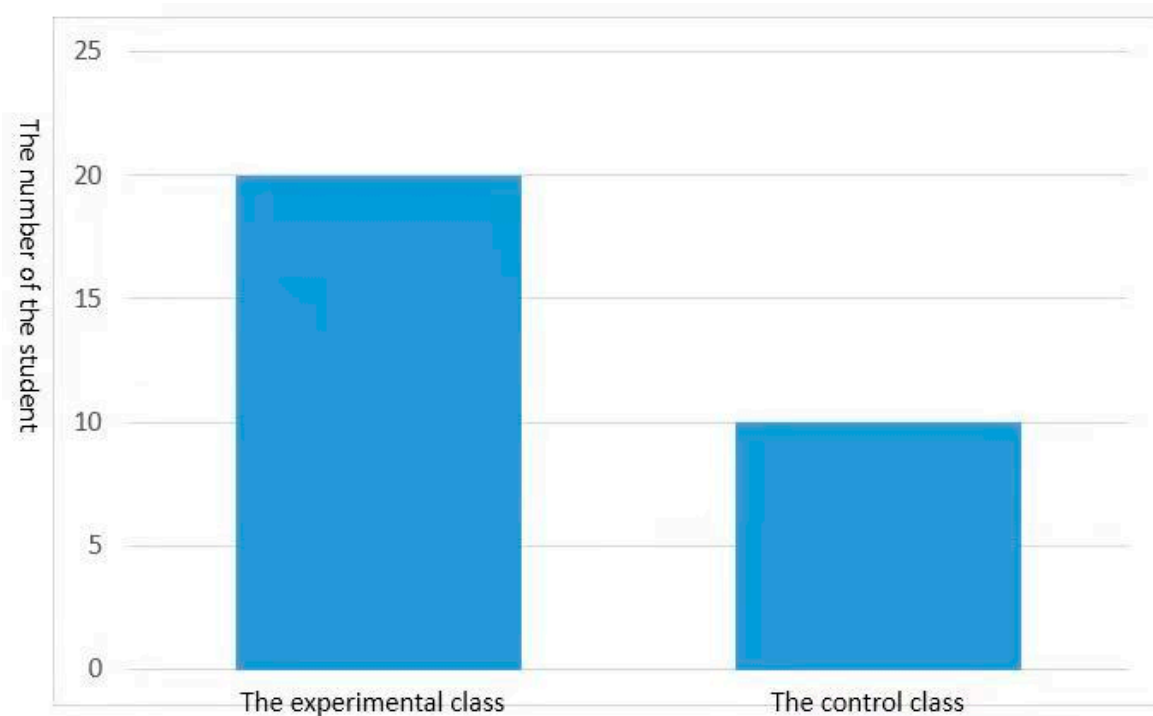


Figure 4. The result of SEEQ teaching evaluation effect for two classes.

From the histogram, we can see that the experimental results of the experimental class are obviously better than the control class. It is indicated that the task-driven classroom teaching method has an obvious influence on the improvement of teaching quality of information technology course in junior high school. At the same time, the students' choice is further analyzed, and the students in the experimental class think that the task-driving classroom teaching method obviously motivates the students' learning initiative and arouses strong interest in learning.

Through the above two results of "teaching effect evaluation", it is proved that the students' perceptual knowledge of teaching effect and the result of teaching effect. The task-driven classroom teaching method introduces the positive role of information technology teaching at junior high school. The class that adopts the task-driven classroom teaching method is more interested in information technology, and is willing to pay more attention to the teaching activities. Test scores also indicate the class with task-driven teaching methods achieved better results. The results confirm the rationality of the research hypothesis and show the great advantage of the task-driven classroom teaching method to the traditional teaching method.

4. Conclusions

In this study, we explore the influence of using task-driven classroom learning method on students' learning interest and learning performance. According to the experiment analysis, the advantages of task-driven classroom teaching method are obvious, which can help to arouse the teaching atmosphere and improve the teaching effect. During classroom teaching, task-driven method has a certain influence on students' learning interest and learning performance.

4.1. The Advantage of Task-Driven Teaching Method Giving to the Teacher

Firstly, we must skillfully integrate the information technology classroom into the task-driven classroom teaching method. Therefore, the teacher should thoroughly analyze the content of teaching, and the appropriate task is more important than teaching. As a result of the selection of task-driven teaching content, students have improved in all aspects. Then we design the reasonable teaching process by using the task-driven method. During the whole teaching process, the teacher not only

improves the ability of analyzing teaching materials and designing tasks, but also improves the ability to control the classroom teaching process.

Secondly, in the process of learning activities, it will have an impact on the quality of teaching if it cannot control the time of students finishing tasks. For example, the assignment of tasks is not sufficient and uneven, students are unable to complete tasks, etc. The teacher should be flexible in the face of these special situations. Before class, we should prepare several programs. In class, we should actively guide the students to finish the task better in class. After class, we should guide the students to reflect for better completion of the teaching.

Thirdly, through the classroom teaching process of task-driven, the teacher's attitude towards information technology has been greatly improved. Because the information technology course is not the subject of the entrance examination, it is not given enough attention and the students are not concerned. It causes information technology teachers to not care about their careers. But if the teacher uses the task-driven classroom teaching method reasonably to make the classroom atmosphere actively, and allow the students to take a positive attitude to this topic. An active classroom atmosphere can increase the teacher's sense of accomplishment. The teacher is more active in the later teaching.

4.2. The Advantage of Task-Driven Teaching Method Giving to Students

Firstly, the student body is fully utilized. According to their learning characteristics, students can choose their learning resources and master the pace of learning independently. While completing the task, students find and acquire the necessary knowledge and skills through practice. Students solve the problem independently and sum up. The evaluation of the task results is also attended by students. For example, when making electronic newspaper, the teacher's job is merely to provide materials, whereas the tasks assigned by the main body are given to students to complete, which can actively promote the cultivation of students' creative thinking.

Secondly, it is more convenient for hierarchical teaching. Each student has their own learning characteristics and use the task-driven classroom teaching method. The task of assigning different difficulty in one class can start a deeper learning task for students with strong learning ability, so that they can acquire more knowledge and skills. Students with poor learning ability can fulfill their own tasks according to their learning ability. Students who have different hobbies are needed to teach according to their aptitude. It is beneficial to improve teaching quality and effect.

Thirdly, it exercises students' ability to integrate knowledge, discovers and solves problems. The knowledge points of information technology are scattered, so it has higher requirements for students to integrate knowledge, discover and solve problems. The task-driven classroom teaching method assigns students specific tasks related to daily life. It makes students aware of their knowledge and skills. It's meaningful and useful to solve specific problems in life. Through the task, students can combine theory with practice to enhance their practical ability.

Finally, to some extent, it exercises the students' teamwork ability and communication ability. Tasks require students to complete in groups. Students are required to have a reasonable division of labor in the process of completing their tasks, and they need to integrate their work to complete the task. Task evaluation has group self-assessment and group evaluation to discover the strengths and weaknesses of others. We can summarize the lessons and lay the foundation for future tasks. In this process, both the students' summary and inductive ability have been improved. The students' teamwork ability and language organization ability have been enhanced.

4.3. The Limitations of the Research

The task-driven classroom teaching method has a positive influence on information technology course teaching. But it can't prove that this method is universal. In fact, before adopting this method, teachers need to judge whether the task-driven classroom teaching method is applicable according to the characteristics of students. At the same time, teachers should experiment with several classes first, and observe the students' fitness for task-driven classroom teaching methods whether they accept

such teaching methods. Teachers should communicate with students actively after class. Understand the students' intentions, and then adjust the final teaching arrangement. Moreover, the development of teaching methods should be a dynamic process. Facing different students, different courses can be taught in different situations, and the teaching plan may change. Teachers should have a keen insight. If there are some problems in the teaching process, the teaching plan should be corrected in time. In addition, the innovative teaching method can bring benefits to teaching, but it cannot deny completely the traditional teaching methods. For some basic courses, it is possible that simple use of task-driven classroom teaching has little effect on teaching quality. Therefore, when choosing the teaching mode, teachers should still combine various teaching methods and adopt appropriate teaching modes according to the characteristics of teaching content.

Author Contributions: All authors contributed to the paper. H.-H.L. collected and organized data, and all authors wrote the manuscript. Finally, Y.-S.S. acted as a corresponding author.

Funding: This study received funding from the PhD research start-up fund project funding of Anhui Normal University (No.2018XJJ21).

Acknowledgments: This study was supported by the Ministry of Science and Technology, Taiwan, R.O.C., under Grant MOST 107-2511-H-008-007, MOST 106-2511-S-008-006, and MOST 106-2622-S-008-002-CC3.

Conflicts of Interest: Authors declare no conflict of interest.

References

1. McLeod, G.A.; Barr, J.; Welch, A. Best Practice for Teaching and Learning Strategies to Facilitate Student Reflection in Pre-Registration Health Professional Education: An Integrative Review. *Creative Educ.* **2015**, *6*, 440–454. [[CrossRef](#)]
2. Su, Y.S.; Yang, J.H.; Hwang, W.Y.; Huang, S.J.; Tern, M.Y. Investigating the Role of Computer-Supported Annotation in Problem Solving based Teaching: An Empirical Study of a Scratch Programming Pedagogy. *Br. J. Educ. Technol.* **2014**, *45*, 647–665. [[CrossRef](#)]
3. Huang, S.J.; Su, Y.S.; Yang, J.H.; Liou, H.H. A Collaborative Digital Pen Learning Approach to Improving Students' Learning Achievement and Motivation in Mathematics Courses. *Comput. Educ.* **2017**, *107*, 31–44. [[CrossRef](#)]
4. Yang, L.T. Research and Practice on Task-Driven Teaching Based on Blended Learning. In Proceedings of the 2017 International Conference on Economics, Management Engineering and Marketing (EMEM 2017), Xiamen, China, 20–22 October 2017; pp. 250–255.
5. Mazumder, Q. Student Motivation and Learning Strategies of Students from USA, China and Bangladesh. *Int. J. Eval. Res. Educ.* **2014**, *3*, 205–210. [[CrossRef](#)]
6. Bai, D.Y.; Hu, Z.; Li, M.Q. Discussion on the Task Driven Method in the Teaching of Automation Technology and Application. *Stud. Lit. Lang.* **2015**, *11*, 57–61.
7. Wang, M.; Li, M. Task Driven Computer Application Teaching Management System in Vocational Colleges. *Revista de la Facultad de Ingeniería* **2017**, *32*, 564–570.
8. Chen, H.; Lin, R.; Li, X. Discussion on the Classroom Teaching Model of Task-Driven and Education Combined with Research in Computer Programming Courses. In Proceedings of the International Symposium on Social Science (ISSS 2015), Wuhan, China, 29–30 August 2015; pp. 258–261.
9. Spence, V.; Helmerich, H.L. Predictors of Academic Achievement: A Longitudinal Perspective. *Br. J. Educ. Psychol.* **2013**, *67*, 263–277.
10. Su, Y.S.; Ding, T.J.; Lai, C.F. Analysis of Students Engagement and Learning Performance in a Social Community Supported Computer Programming Course. *Eurasia J. Math. Sci. Technol. Educ.* **2017**, *13*, 6189–6201. [[CrossRef](#)]
11. Eric, P.; Judith, L. Redesigning the Assessment of an Entrepreneurship Course in an Information Technology Degree Program: Embedding Assessment for Learning Practices. *IEEE Trans. Educ.* **2012**, *55*, 566–572.
12. Qincun, P. A Study on the Mode of Combining Artistic Design Practice Teaching with Core Accomplishment based on Simulation Experiment. In Proceedings of the 2017 International Conference on Smart City and Systems Engineering (ICSCSE), Changsha, China, 11–12 November 2017; pp. 104–106.

13. Chen, H.; Leung, C.C.; Xie, L.; Ma, B.; Li, H. Multitask Feature Learning for Low-Resource Query-by-Example Spoken Term Detection. *IEEE J. Sel. Top. Signal Process.* **2017**, *11*, 1329–1339. [[CrossRef](#)]
14. Yang, S.C.; Huang, Y.F. A Study of High School English Teachers' Behavior, Concerns and Beliefs in Integrating Information Technology into English Instruction. *Comput. Hum. Behav.* **2008**, *24*, 1085–1103. [[CrossRef](#)]
15. Chou, C.H.; Su, Y.S. A Block Recognition System Constructed by Using a Novel Projection Algorithm and Convolution Neural Networks. *IEEE Access* **2017**, *5*, 23891–23900. [[CrossRef](#)]
16. Zhao, Y.X.; Su, Y.S.; Chang, Y.C. A Real-Time Bicycle Record System of Ground Conditions based on Internet of Things. *IEEE Access* **2017**, *5*, 17525–17533. [[CrossRef](#)]
17. Yang, H.H.; Su, C.H. Learner Behavior in a MOOC Practice-Oriented Course: An Empirical Study Integrating TAM and TPB. *Int. Rev. Res. Open Distrib. Learn.* **2017**, *18*, 35–63.
18. Tu, J.C.; Liu, L.X.; Wu, K.Y. Study on the Learning Effectiveness of Stanford Design Thinking in Integrated Design Education. *Sustainability* **2018**, *10*, 2649. [[CrossRef](#)]
19. Marsh, H.W. SEEQ: A Reliable, Valid, and Useful Instrument for Collecting Students' Evaluations of University Teaching. *Br. J. Educ. Psychol.* **1982**, *52*, 77–95. [[CrossRef](#)]



© 2018 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).