Comparison of Learning Achievement and Learning Attitude for Computer Application Fundamentals Course between using Task-Based Learning and Traditional Learning in Guangxi Minzu Normal University, China

Yeyan Lu

A Thesis Submitted in Partial Fulfillment of Requirements for

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November 2023

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ABSTRACT

The purposes of this study were: 1)to compare learning to learning achievement under task-based learning and traditional learning activities, 2)to investigate students' attitudes towards computer learning after task-based learning. The samples of this research came from 30 students in Class 1 and 32 students in Class 2 of Mathematics Education major in Guangxi Minzu Normal University in the 2023 academic year. Class 1 used task-based learning and Class 2 used traditional learning. The tools used in the study included 4 task-based learning lesson plans, 4 traditional learning lesson plans, a test paper to measure learning achievement and a learning attitude questionnaire. The data were collected from the classroom teaching process, learning achievement tests, and questionnaires. Before and after classroom intervention, pre-test and post-test were used to obtain learning achievement. After classroom teaching, questionnaires were conducted to understand students' learning attitudes towards task-based learning. Data analysis was performed by percentage, mean, standard deviation, and t-test.

The results of this research were as follows:

1. The average score of task-based learning activities was 147.3, accounting for 90%; the average score of traditional learning activities was 138.28, accounting for 84%, both higher than 70%, which proved that the two learning activities were effective and task-based learning was significantly higher than traditional learning.

2. The post-test score of students using task-based learning was 85.53, and the post-test score of traditional learning activities was 75.69, with an average difference of 9.84. Students who use task-based learning had significantly higher learning achievement than those who use traditional learning at the level of 0.05.

3. The average value of students' attitude towards using task-based learning is 4.30, and the average value of learning attitude towards traditional learning is 3.92. The students' attitude towards task-based learning is higher than that of traditional learning in the Computer Application Fundamentals Course, which is at a relatively high level.

In short, task-based learning allowed learners to achieve higher learning achievement, and learners held a high attitude towards task-based learning in computer application fundamentals course. Therefore, this teaching method is suitable for computer application fundamentals course, and teachers can develop this teaching method.

Keyword : Task-Based Learning, Traditional Learning, Learning Achievement, Learning Attitude, Computer Application Fundamentals Course

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CHAPTER I

INTRODUCTION

This chapter presents the background of the study, the purpose of the study, the study and also discusses the hypothesis, scope and importance of the study. It also provides an operational definition of the study.

1.1 Background

The 21st century is an era of rapid development of information exchange. The emergence of technologies such as big data and artificial intelligence has brought about a major change in the world economy, social sciences, and other fields. Computer information technology has penetrated all aspects of people's lives, and people need to use computers to solve problems in study or work. Therefore, basic computer skills are the skills that people must master in the 21st century.

The Ministry of Education of the People's Republic of China's (2012)"Ten-Year Development Plan for Education Informatization (2011-2020)" points out that it is necessary to make an overall development plan for educational informatization in the next ten years, and proposes to apply information technology to the field of education. The Outline of the National Medium- and Long-Term Education Reform and Development Plan (2010) also emphasizes that "education" is the fundamental goal of education. In the process of "education", we must take students as the center and teachers as the leaders, and fully mobilize the subjective initiative of students.

In the process of "education", to allow students to quickly master basic computer skills, colleges and universities have been exploring new teaching models. Task-based learning drives students' learning motivation by setting tasks, stimulates students' interest in learning, cultivates students' ability to actively explore, and is widely used in classrooms. The earliest record retrieved by task-driven keywords on CNKI was in 1998. Task-based learning has developed to a certain degree in China so far, and it

also conforms to the development trend of modern education, which can better promote the transition from exam-oriented education to quality education.

In 1997, the Ministry of Education of China promulgated "Several Opinions on Strengthening the Basic Teaching of Computer for Non-Computer Majors", which standardized the basic teaching of computer application in colleges and universities. To adapt to the continuous development of information technology in the 21st century, in 2005, the Teaching Guidance Sub-Committee of Computer Application fundamentals Courses for Non-Computer Majors in Colleges and Universities of the Chinese Ministry of Education once again put forward the "Opinions on Further Strengthening the Basic Teaching of Computer Application in Colleges and Universities". The opinion emphasizes that it is necessary to fully understand the laws of the basic teaching of computer application, which cannot be divorced from practical application. It is necessary to do a good job in the reform of teaching methods, make full use of task-based learning methods, and focus on teaching and practicing.

The computer application fundamentals course in colleges and universities is not a course in computer software development and calculation. It is a compulsory cultural basic course for non-computer majors in colleges and universities. It mainly trains students to master the basic theoretical knowledge and basic operation skills of computers, so that students have certain computer application abilities. So that learners can apply the knowledge to improve the learning of professional courses and future professional development. Therefore, it is very necessary and important to improve students' attitudes toward computer learning.

There are still some problems in the teaching and learning of computer application basics in China. For example, Weimin(2016) considered non-computer majors to have different computer foundations and single classroom teaching methods, Lianqing(2018) said some students do not have a deep understanding of the importance of computer application fundamentals course and lack practical ability.

Teachers teach course content and occupy most of the classroom time, and students have little time for course practice and do not know how to manage their study time.

At the same time, the researcher analyzed the average scores(out of 100) of the learning achievement of 51 classes in the first semester of the 2021-2022 academic year at Guangxi Minzu Normal University in the Computer Application Fundamentals Course. Judging from the results of the analysis, the class with the lowest score in the school is 41.5 points, the class with the highest average score is 87.8 points, and the general average score of the school is 74.4 points. There are 3 classes below 60 points, 9 classes with 60-70 points, 26 classes with 70-80 points, and 13 classes of 80-90 points. From the perspective, the learning achievement of some classes is low, which reflects that there are still problems in the teaching management of the Computer Application Fundamentals Course. On the one hand, the problem is related to the students, and on the other hand, it is related to the teaching of teachers. Student issues are mainly reflected in the learning attitude towards Computer Application Fundamentals Course. Students have a negative attitude towards learning, are not full of learning emotions, and are not interested in learning content, resulting in lower learning achievement; Teachers' problems are mainly reflected in their teaching methods. The teaching methods used by teachers are relatively outdated. For example, they only use the traditional learning method of filling the classroom, which is not conducive to cultivating students' independent learning ability.

In order to solve the above problems and improve students' learning achievement and learning attitude, the researcher has studied the application of task-based learning methods to computer-based teaching. Task-based learning is based on constructivist learning theory and is learner-centered. Teachers provide learners with specific tasks, learners complete tasks through collaboration or by themselves, and then learners' feedback on the completion of tasks to teachers. The task can be a single task or a large task can be broken down into multiple small tasks. The learner breaks through the small tasks one by one and finally completes the large task.

Task-based learning have the following benefits:

1) In the process of participation, learners systematically master the process of solving tasks by learning by doing.

2) Learners can build a knowledge system and summarize their own experiences in the process of learning.

3) Master the ability to solve problems, which can usually be applied to daily work.

4) Exercise the ability of students to collaborate in groups and enrich personal knowledge in collaboration.

5) Develop good habits and know how to work systematically.

6) Ability to be creative and able to apply what they have learned to solve problems in life.

Based on the above statements, we can see that the computer is an indispensable tool for people in the 21st century. How to better use the computer to bring benefits to our work and life is a problem that we need to solve and deal with. However, the teaching of information technology in China's basic education is relatively uneven. Colleges and universities must offer basic courses in computer applications ;Given the benefits of task-based learning, it is feasible to use this learning approach in this course. Therefore, the researcher compared task-based learning with traditional learning methods, trying to prove that task-based learning is more conducive to new teachers' mastering classroom teaching than traditional learning. At the same time, the task-based learning method is more conducive to improving learners' attitudes in learning basic computer application courses. Learners acquire skills through tasks and greatly improve their learning achievement.

1.2 Research Purposes

1. To compare learning to learning achievement under task-based learning and traditional learning activities.

2. To investigate students' attitudes towards computer learning after task-based learning.

1.3 Research Hypothesis

Students who use task-based learning have significantly improved learning achievement at the 0.05 level than students who use traditional learning.

1.4 Research Importance

1. Develop lesson plans for task-based learning and traditional learning, and organize students to carry out learning activities based on the lesson plans.

2. Applying task-based learning in this study is more helpful than traditional learning for learners to improve their Computer Application Fundamentals Course learning achievement.

3. The results of this study can be used as instructional design guidelines for school teachers to promote teachers to change their teaching methods to be learner-centered rather than traditionally lecture-based.

4. This research is helpful for teachers who are teaching the Computer Application Fundamentals Course for the first time.

1.5 Research Scope

The scope of this research study is defined as follows:

1.5.1 Population and Sample

1.5.1.1 Population

The population used in this study is the first-year students majoring in mathematics education at a university in Guangxi, South China, in the 2023 academic year, there are 3 classes with 95 students.

1.5.1.2 Sample

The sample groups used in this study were 30 students in class 1 and 32 students in class 2 studying mathematics education at a university in Guangxi Province, South China, in the 2023 academic year. Random sampling is as follows:

The experimental class is composed of 30 students in class 1, applying task-based learning management technology. The control class consisted of 32 students in class 2, and their learning was managed according to traditional learning.

Table 1 the demographics of the study participants

sample		male	female	total population
Experimental class	Number of participants	11	19	30
	percentage	36.7%	63.3%	100%
	age group	18 to 19 years old		
control class	Number of participants	12	20	32
	percentage	37.5%	62.5%	100%
	age group	18 to 19 years old		

1.5.2 The variables used in the study included:

1.5.2.1 Independent Variable

The independent variables in this study are divided into:

Task-based learning.

Traditional learning.

1.5.2.2 Dependent Variable

Learning achievement, including pretest scores and posttest scores.

Learning attitude, including knowledge, emotion and behavior.

1.5.3 Research Content and Time

1.5.3.1 Research Content:

The content of this research is Microsoft Excel, Chapter 4 of the Computer Application Fundamentals Course.

1.5.3.2 Experimental Time:

The experiment will be done in the first semester of 2023. There will be 1 hour of testing before class, 1 class hour and 40 minutes, 3 class hours per class, 12 class hours in total, and an hour of test time at the end.

1.5.4 Study Location

The research was conducted at a university in Chongzuo City, Guangxi Province, in South China.

1.6 Definition of Terms

1.6.1 Task-Based Learning

In this study, task-based learning means that teachers design corresponding tasks according to the requirements of course teaching, arrange the content to be taught in each task, and teachers publish task objectives. Students take each task as a clue and complete the corresponding task by doing while learning, so as to obtain ideas and methods to solve the problem. The steps boil down to the following:

Step 1: Propose the mission objectives. The teacher prepares the preliminary work in advance and puts forward specific task goals.

Step 2: Teamwork and collaboration. The members of each group cooperate in the computer room.

Step 3: Task Implementation. The members perform the task according to the group division of labor.

Step 4: Produce Results. The group will summarize the task results and prepare to report materials.

Step 5: Sharing results. Each group reports the implementation of tasks.

Step 6: Evaluate Feedback. Mutual evaluation between groups, mutual evaluation of teachers and students.

Step 7: Summarize and improve. Teachers and students summarize the knowledge points together.

1.6.2 Traditional Learning

Traditional learning management is to organize learning activities according to the traditional teaching mode, with the following steps:

Divided into the following steps:

Step 1: In the teaching preparation stage, understand the characteristics of students, refer to textbooks to prepare teaching content, prepare classroom questions, and evaluate learning content.

Step 2: Teaching Phase

In the introduction of the course, teachers first review the knowledge they have learned for the students and stimulate the students to learn the new course content.

During the teaching process, the teacher begins to explain the content of the new course and organizes students' learning by explaining the content of the course and demonstrating it.

In the summarization stage, teachers and students summarize the content of the lessons learned together, and teachers can consolidate their knowledge by asking students questions and allowing students to practice.

Step 3: Evaluation Phase

Assess student performance in class, ask students questions about handouts, and do additional tests and exercises.

1.6.3 Learning Achievement

Learning achievement is a score for knowledge and comprehension of course content and skills. The researchers compiled achievement test papers based on the curriculum content framework and objectives to measure. The test paper includes multiple choice questions, skill operation question 1, and skill operation question 2.

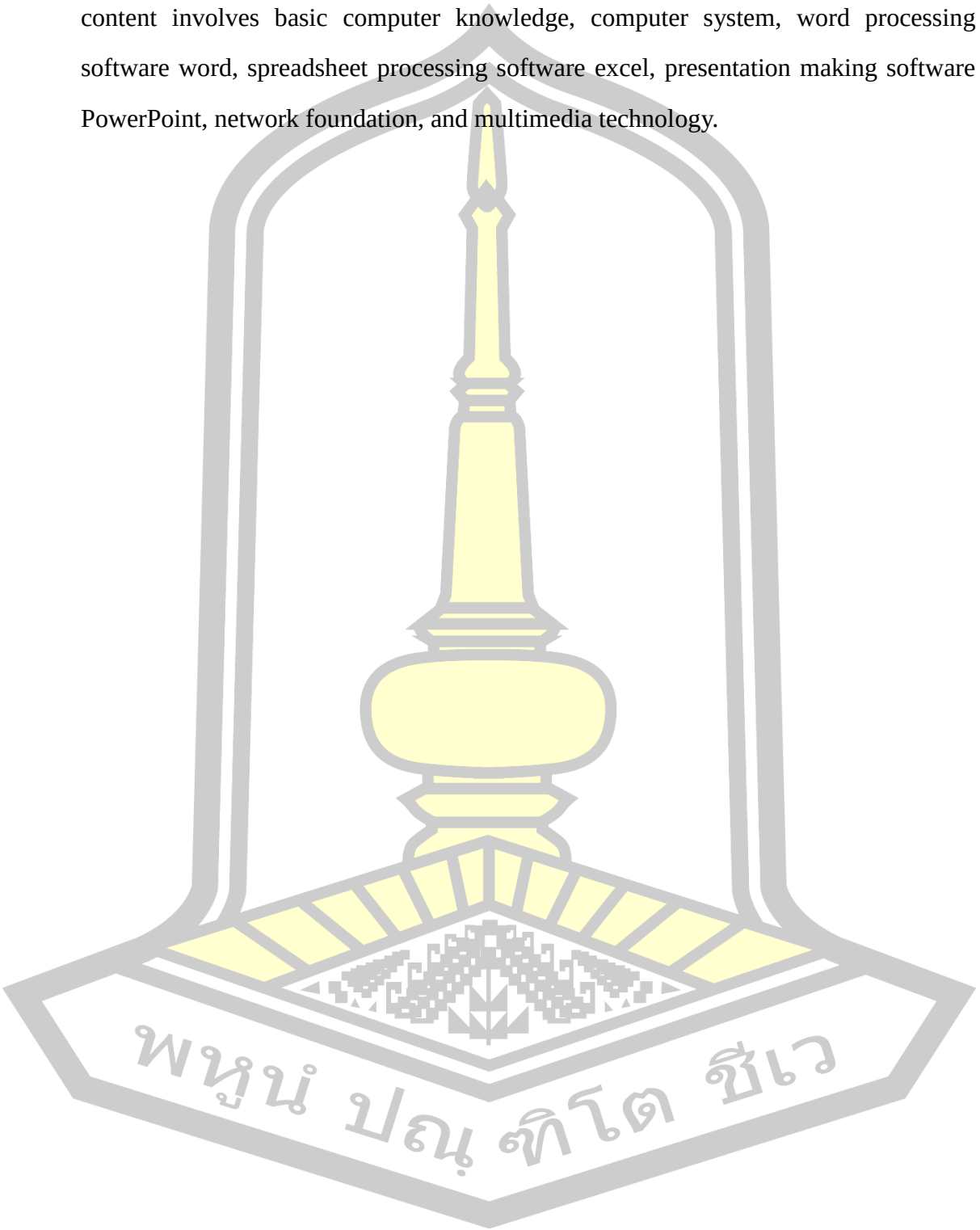
1.6.4 Learning Attitude

Learning attitude refers to a feeling toward learning computer skills, which will affect the behavior of computer skills, both positive and negative. For negative attitudes, positive behavior should be used to avoid or eliminate negative impacts. This study uses a questionnaire survey method to measure learning attitudes.

1.6.5 Computer Application Fundamentals Course

The computer application fundamentals course as a public compulsory basic course, is a compulsory course for every non-computer major in Chinese ordinary

institutions of higher learning. It is offered in the first semester of freshmen. The course content involves basic computer knowledge, computer system, word processing software word, spreadsheet processing software excel, presentation making software PowerPoint, network foundation, and multimedia technology.



CHAPTER II

LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

In this chapter, the following are studied:

2.1 Computer Application Fundamentals Course

2.2 Task-Based Learning

2.3 Traditional Learning

2.4 Learning Achievement

2.5 Learning Attitude

2.6 Related Research

2.1 Computer Application Fundamentals Course

2.1.1 Computer Basic Teaching

The "Several Opinions on the New Round of University Computer Education and Teaching Reform" and "Opinions on Further Strengthening the Basic Computer Teaching in Colleges and Universities" put forward by the China Association of Computer Basic Education in Colleges and Universities (2013) fully emphasized the importance of computer basic teaching in colleges and universities.

The general level of computer knowledge and ability achieved by learners after completing this course:

1 Master the basic knowledge of computer software and hardware.

2 Have the ability to use computers to deal with daily affairs.

3. Have the ability to use the network to obtain information, analyze information, and use information to communicate with others.

4 Comply with the laws and regulations of the information society.

5 Ability to manage, process, analyze and utilize data using databases.

6 Have the ability to use typical application software to deal with problems in this professional field.

2.1.2 Analysis of the first-level computer basics and MS OFFICE examination syllabus of the China Computer Rank Examination

(China Education Examination Network, n.d.) National Computer Rank Examination, referred to as NCRE, is approved by the Ministry of Education and hosted by the Education Examination Institute of the Ministry of Education. A national computer proficiency test system is used to test candidates' computer application knowledge and skills. Divided into four levels, the computer application foundation MS OFFICE belongs to the first level. The basic requirements for the MS OFFICE Level 1 exam syllabus stipulated by NCRE:

First, master the basic knowledge of computer

Second, understand the composition and function of computer systems

Third, understand the functions of the operating system and master the basic operations and applications of the Windows operating system

Fourth, understand the basic knowledge of word processing MSWord, master the operation and application of word processing MSWord, and be proficient in operating a Chinese character (keyboard) input method.

Fifth, understand the basic knowledge of spreadsheet MS Excel, master the operation and application of spreadsheet software MS Excel

Sixth, understand the basic knowledge of multimedia presentation software, and master the operation and application of the presentation-making software MS PowerPoint.

Seventh, understand the concept of computer networks and Internet knowledge, master the operation and application of IE browser and Outlook Express software.

There are 5 major parts of the main assessment. The following summarizes the assessment content of these 5 major parts:

Table2 Basic knowledge of computers

index	Assessment content	topic distribution	Score distribution
basic computer knowledge	1. The development, types and application fields of computers.	single choice question	20
	2. Representation and storage of data in a computer.		
	3. Concept and application of multimedia technology.		
	4. The concept, characteristics, classification and prevention of computer virus.		
	5. The concept, composition and classification of computer network; the concept and prevention of computer and network information security.	single choice question	20
	6. Understand the basic concepts of computer networks and the basic knowledge of the Internet, mainly including network hardware and software, the working principle of the TCP/IP protocol, and common concepts in network applications, such as domain names, IP addresses, DNS services, etc.	single choice question	

Table 3 Function and use of the operating system

index	Assessment content	topic distribution	Score distribution
Function and use of the operating system	1. Composition and main technical indicators of computer software and hardware systems	Windows operation questions	10
	2. The basic concept, function, composition and classification of the operating system		
	3. Basic concepts and common terms of Windows operating system, files, folders, libraries, etc.		
	4. Basic operation and application of Windows operating system (1) Setting of desktop appearance, basic network configuration.		

index	Assessment content	topic distribution	Score distribution
	(2) Proficient in the operation and application of the resource manager. (3) Master the operation of viewing and setting files, disks, and display properties. (4) Installation, deletion and selection of Chinese input method. (5) Master the search for files, folders and keywords. (6) Understand the basic system tools of software and hardware.		
	5. Be proficient in the use and operation of browsers and e-mails.		

Table 4 Function and use of word processing software

index	Assessment content	topic distribution	Score distribution
Function and use of word processing software	1. The basic concept of Word2016, the basic functions, operating environment, startup and exit of Word2016.	Operation questions	25
	2. Basic operations such as document creation, opening, inputting, saving, and closing.		
	3. Basic editing techniques such as text selection, insertion and deletion, copying and moving, search and replacement; editing of multiple windows and multiple documents.		
	4. Basic typesetting techniques such as font formatting, text effect modification, paragraph formatting, document page setting, document background setting and document column.		
	5. Creation and modification of tables; modification of tables; input and editing of data in tables; sorting and calculation of data.		

index	Assessment content	topic distribution	Score distribution
	6. Insertion of graphics and pictures; establishment and editing of graphics; use and editing of text boxes and WordArt.		
	7. Document protection and printing.		

Table 5 Features and Use of Spreadsheet Software: Excel

index	Assessment content	topic distribution	Score distribution
Features and Use of Spreadsheet Software Excel	1. Basic concepts and functions of spreadsheets, basic functions, operating environment, startup and exit of Excel2016.	Operation questions	20
	2. Basic concepts and operations of workbooks and worksheets, creation, saving and exit of workbooks and worksheets; data input and editing; selection, insertion, deletion, copying, and movement of worksheets and cells. Sheet renaming and sheet window splitting and freezing.		
	3. Formatting of worksheets, including setting cell formats, setting column widths and row heights, setting conditional formatting, using styles, auto-applying modes, and using templates, etc.		
	4. The concept of cell absolute address and relative address, the input and copy of formulas in worksheets, and the use of common functions.		
	5. Chart creation, editing, modification and modification.		
	6. The concept of data list, the establishment of data list, the sorting, screening, subtotal summary of data list content, data merging, and the establishment of data pivot table.		

index	Assessment content	topic distribution	Score distribution
	7. Page setup, print preview and printing of the worksheet, establishment of links in the worksheet.		
	8. Protect and hide workbooks and worksheets.		

Table 6 PowerPoint features and usage

index	Assessment content	topic distribution	Score distribution
PowerPoint features and usage	1. Basic functions, operating environment, startup and exit of PowerPoint2016.	Operation questions	15
	2. Creation, opening, closing and saving of presentations.		
	3. Use of presentation view, basic operations of slides (edit layout, insert, move, copy and delete).		
	4. The basic production method of slides (text, pictures, word art, shapes, tables, etc. are inserted and formatted).		
	5. Presentation theme selection and slide background settings.		
	6. Presentation show design (animation design, show design, switching effect design).		
	7. Packaging and printing of presentations.		

The teaching content of the computer application basic course is in line with the content stipulated in the MS OFFICE examination outline of the first level of the national computer grade examination.

2.1.3 Computer Application Fundamentals Course

All colleges and universities in China regard "Computer Application Fundamentals" as a public compulsory basic course, which is a compulsory course for every non-computer major, and is offered in the first semester of freshmen. By taking

this course, first-year freshmen systematically learn the basic knowledge of computer application and Microsoft Office application software, and can successfully pass the NCRE exam.

Jiarong Zhu (2019) the teaching content of this course includes:

Chapter 1 Computer Basics

Chapter 2 Computer Systems

Chapter 3 Word Processing Software

Chapter 4 Spreadsheet Processing Software Excel

Chapter 5 Presentation Maker PowerPoint

Chapter 6 Network Fundamentals and Internet Applications

Chapter 7 Multimedia Technology.

Through this course, learners will acquire the following knowledge and abilities:

(1) Knowledge about the basics of computers and how computers work.

(2) Knowledge about computer systems, master the basic usage and applications of the Windows operating system, such as file and folder operations.

(3) Regarding Chinese and English input techniques, the ability to obtain a higher text input speed

(4) Use Word for document processing, which can operate on documents, use fonts, paragraphs, tables, and mix pictures and texts.

(5) Use Excel for data processing, understand the settings of Excel spreadsheet data, the use of functions, data management, analysis, etc.

(6) Use PowerPoint to make multimedia presentations, add objects to the presentations, set themes, masters, animations, and transition effects, and show methods.

(7) Use the basic knowledge of computer networks and the Internet to realize the basic ability to search for relevant information and send emails on the Internet with a browser.

(8) Use the acquired knowledge and skills to solve problems, use computer skills to solve problems, and operate computers correctly, such as installing software, performing routine maintenance on computers, and applying computer knowledge to other disciplines.

Importance of Computer Application Fundamentals Course:

Computer application technology has penetrated various industries, and people's lives are closely related to computers. The popularization of smart devices such as mobile phones and tablet computers has made people inseparable from computer technology, and computers have become an important tool to promote social progress. Computer knowledge is also compulsory knowledge for modern people. In the information age, if you have not studied the basic courses of computer application and have not participated in the corresponding training, it is quite difficult to operate a computer. Therefore, learning the basic courses of computer application is very important for college students and is a need for career development.

2.2 Task-Based Learning

The main research direction of this research is the effect of task-based learning methods on learners' learning achievement after applying task-based learning methods in basic computer application teaching classrooms in China. Therefore, for task-based learning theory, researchers need to have a very thorough understanding, which is the top priority in the research process. This section mainly introduces the definition, composition, implementation steps, and benefits of task-based learning.

2.2.1 Definition of task-based learning

Many educators define tasks.

Definition of task:

Long (1985) argues that a task is： a piece of work that can be paid or free for oneself or others. Such as drawing a fence, dressing a child, buying a pair of shoes,

etc. In other words, ‘task’ is meant the hundred and one things people do in everyday life, at work, at play, and in between.

The following definition of the task comes from the Dictionary of Applied Linguistics and applies to classroom teaching:

…an activity or action which is carried out as the result of processing or understanding language (i.e. as a response). For example, drawing a map while listening to a tape, listening to an instruction, and performing a command may be referred to as tasks. Tasks may or may not involve the production of language. (Richards et al., 1986).

This definition can be seen that teaching tasks are set by teachers and require learners to complete work in the classroom. It is also shown that tasks can also be applied to non-verbal teaching.

Nunan (2006) argues that a task is a piece of classroom work that involves learners in comprehending, manipulating, producing, or interacting with the target language while their attention is focused on mobilizing their grammatical knowledge in order to express meaning, and in which the intention is to convey meaning rather than to manipulate form.

Prabhu (1987) task is ‘an activity which required learners to arrive at an outcome from given information through some process of thought, and which allowed teachers to control and regulate that process’.

From the above definition, it can be concluded that a task is an activity for the learner, and the learner completes the task by thinking while learning and then evaluates the task to draw a conclusion.

In this study, task-based learning means that teachers design corresponding tasks according to the requirements of course teaching, arrange the content to be taught in each task, and teachers publish task objectives. Students take each task as a clue and complete the corresponding task by doing while learning, so as to obtain ideas and methods to solve the problem.

2.2.2 Composition of tasks

Some educators have agreed on what constitutes a task:

Summarized as follows:

NuNan (1989) and Ellis (2003) discuss the components of the task:

1. Goal Tell the learner what the goal of the task is.

2. Input the information in the task operation, which can be text information or oral information, such as written text information.

3. Procedure Identifies the steps in which the task is completed.

4. Rules determine the rules for the roles of teachers and learners in the task.

5. Output results After the task operation is completed, the output results, one is the product, that is, the result after completing the task, and the other is the process, that is, the cognition obtained during the task operation.

To sum up, the components of a task include goals, inputs, processes, rules, and output results.

2.2.3 Task-based learning and traditional learning

The task-based classroom has changed from the traditional classroom to a learner-centered teaching model. Through task practice, both students and teachers become learners, and teachers can serve as guides for learners, rather than just filling the classroom.

Dagen Wang (2013) the traditional teaching mode is mainly represented by the lecture-style teaching mode, with “teacher center, textbook center, and classroom center” as the theoretical core. This teaching mode focuses on the imparting of knowledge and emphasizes the control of teachers in the classroom, so teachers are in an absolutely dominant position in the teaching process.

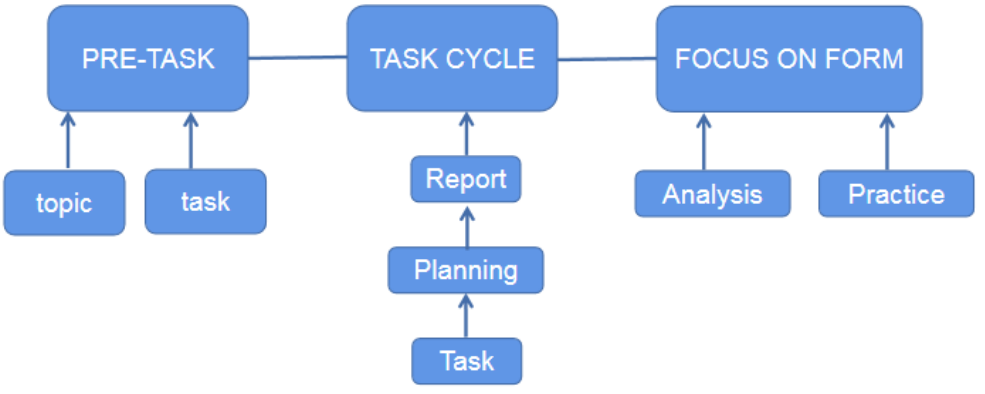
In the task-based learning classroom, the teaching method has changed. It first passes the task to the classmates, and the students then find and obtain the necessary information to solve the task. They can solve the task through brainstorming activities among peers and teamwork activities. . At this time, the teacher is not just a teacher,

he also acts as a guide to guide students to obtain information. A student can only get learning results if he is actively involved, otherwise he will fail.

2.2.4 The teaching activity mode of the task

Willis (1996) proposed a framework for applying task-based learning, as shown in the figure1:

Figure 1 task flowchart



Ellis (2003) summarized the steps of task-based learning management into three parts:

The first step, the pre-task phase, focuses on the goal of enabling the learner to perform the task.

The second step is the task cycle phase, in which learners perform tasks, where teachers should consider making lesson plans in advance, which can encourage learners to perform tasks effectively and provide help during learners' learning to motivate learners to be more interested in the language.

The third step is the post-task stage, similar to Willis' language focusing stage, in which the learners report the process of work, raise the problems of language communication, and the teachers discuss together according to the learners' incorrect language problems.

Willis (2013) further refined the steps of task learning management in task-based teaching, including the following steps:

1 Course introduction.

2 Define mission outcomes and mid-term goals.

3 The starting point of the task: input and timing of the task start-up phase.

4 Preparation and planning before the task.

5. Control the "agenda" of the task and clarify the structure of the task.

6 Identify task interaction patterns and roles of participants.

7 task cycles, "pushing" task output for accuracy.

8 Post-task activities, including text recycling analysis, reporting tasks phase, repeating tasks, evaluation and reflection, and review phases.

Xun Zhang(2001) believes that task-driven is a process of citing→testing→doing→seeing→innovation, and students will learn from not knowing→willing→proficiency→consolidation→improvement.

Yunxia Zhu(2002) believes that the task-driven teaching method is a kind of "single-point approach" or "black box" method, which is to understand the operation method of the computer according to the designed steps.

Regarding the types of tasks, HaiYun Hou &Xinbao Li(2007) summed up the problem-type tasks, project-type tasks, case-type tasks, and operation-type tasks.

All in all, task-based learning is mainly student-centered, focusing on the development of the student body, and focusing on the creation of teaching scenarios. In the process of implementation, it emphasizes the learning mode of taking the task as the center, taking the teacher as the guide and the students as the main body, aiming at cultivating the students' innovation ability and teamwork ability and giving full play to the student's practical ability and innovation ability.

This study synthesizes the Ellis (2003) and Willis(2013) task-based learning management procedures and proposes the task-based learning management implementation steps used in this study:

First of all, teachers create a learning situation related to the teaching content, deeply analyze the teaching materials to understand the teaching content, understand the knowledge level of students, and prepare tasks. Through group cooperation and personal inquiry, learners find skills and methods to solve tasks. After the task is completed, they will get the results and show the work to teachers. Teachers and students will evaluate and summarize. In the process of constructing knowledge and meaning, teachers and students need to actively communicate around the task. Overall it boils down to the following points:

Step 1: Propose the mission objectives. The teacher prepares the preliminary work in advance and puts forward specific task goals.

Step 2: Teamwork and collaboration. The members of each group cooperate in the computer room.

Step 3: Task Implementation. The members perform the task according to the group division of labor.

Step 4: Produce Results. The group will summarize the task results and prepare to report materials.

Step 5: Sharing results. Each group reports the implementation of tasks.

Step 6: Evaluate Feedback. Mutual evaluation between groups, mutual evaluation of teachers and students.

Step 7: Summarize and improve. Teachers and students summarize the knowledge points together.

2.2.5 The benefits of task-based learning

Task-based learning is practice-based and provides learners with hands-on experience that can be applied to work and life. Willis (1996) discusses the benefits of task-based learning as follows:

1 Learners speak more confidently and communicate more with others.

2 Learners are fun, motivated, and challenging at work.

3 The learner communicates more fluently in language and practices to solve various problems that arise.

4 Learners have increased confidence in using the target language when they complete tasks in the target language with their peers.

5 The learner fully participates in classroom interaction and develops the learner's language skills and social skills.

Rongfang Fan (2017) proposed that the benefits of task-based learning are as follows:

1Learners dare to explore, their information literacy has improved, and their learning motivation has improved

2. Teamwork, communication, and problem-solving among learners.

3. The learner's self-exploration and learning ability is improved.

4 Students gain knowledge and add value to employment.

Combining the above, the benefits of broader task-based learning are as follows:

(1) In the process of participation, learners can systematically master the solution process of tasks by doing what they want to do by themselves.

(2) In the process of learning, learners can build a knowledge system and summarize their own experiences.

(3) Master the ability to solve problems, which can usually be applied to daily work.

(4) Exercise the ability of students to collaborate in groups and enrich their knowledge in collaboration.

(5) Develop good habits and know how to work systematically.

(6) Have the ability to be creative and be able to apply what they have learned to solve problems in life.

2.2.6 The theoretical basis of task-based learning

2.2.6.1 The Constructivist Learning Theory

Constructivism, also known as structuralism, originated from the research of Piaget and Vygotsky. Slavin (2019) Constructivist learning theory believes that learners must autonomously discover and transform complex information, Test new knowledge against existing rules, and adjust old rules when they no longer apply.

Constructivist learning theory emphasizes that students change from passive learners to active learners, and learners complete knowledge construction through cooperative learning. Teachers are no longer simply imparters of knowledge. Teachers, as motivators to guide students' active learning, are responsible for creating teaching situations and teaching tasks that are conducive to students' learning.

Under the guidance of constructivism theory, task-based learning takes students as the main body of learning and teachers as the guide to create situations and tasks related to the teaching content. Students acquire new knowledge through the learning of tasks. In the process of learning, they give full play to the enthusiasm of learners, actively collect relevant information about tasks, learn to ask questions, and use the knowledge they have learned to solve problems, so as to complete the task.

2.2.6.2 Dewey's "learning by doing" theory

(The Learning Agency LAB, n.d.) "Learning by doing" means learning more ideas while doing activities. "Learning by doing" is an educational theory first proposed by the American philosopher John Dewey, and "learning by doing" provides support for task-based learning. "Doing" is practice. When learners do tasks, they build their own knowledge system, improve their knowledge and ability, and help cultivate skilled talents.

2.2.6.3 The theory of humanism

Humanistic learning theory was created by American psychologist A·H Maslow, and the current representative is C·R Rogers, emphasizing a meaningful view of free

learning, student-centered teaching, and an informed and unified teaching goal view. Humanism advocates that teachers are "facilitators of learning" rather than "teachers".

2.2.6.4 Cooperative learning

Cooperative learning is an effective teaching method. The most widely used definition of it is by David and Roger Johnson of the University of Minnesota: with a common goal, learners form a collaborative group. Everyone in a collaborative group has a sense of personal responsibility and actively collaborates to achieve a common goal.

Johnson (1994) defined the elements of cooperative learning as 1. positive interdependence 2. face-to-face interaction 3. personal responsibility 4. social skills 5. group evaluation.

Active interdependence, each team member has a clear division of labor, all contribute to a common goal, there can be no free riders, and the success of the team requires the efforts of all members. Team members achieve their personal goals while all members meet them.

Facilitates face-to-face interactions in a process of positive interdependence, provides effective assistance to each other, and progresses to advance team goals.

Personal responsibility requires that team members not free-rider, have individual contributions in team activities, and contribute an individual part to the success of the team.

Of course, team members must understand and trust each other, support and communicate with each other, which helps to improve the social skills of team members.

Effective teams reflect on what actions are feasible and effective, what effective work has been accomplished by each member, and their role in the team. Teachers positively evaluate teamwork.

Gao (2019) In the task-based learning process, the teacher is the leader, the student is the main body of learning, and a cooperative relationship is formed between

teachers and students and between students. That is to say, a collaborative relationship with tasks as the main line, teachers as the leading and students as the main body. Collaboration became the primary mode of task-based learning.

Research on the application of task-based learning in teaching is based on the above learning theories: constructivist learning theory, Dewey's "learning by doing" theory, humanistic learning theory, and cooperative learning. Therefore, task-based learning is learner-centered, and learners can fully participate in learning activities, discuss, interact, and share their ideas with classmates in a way of actively completing learning tasks. Learners reconstruct knowledge and acquire new skills while doing tasks, and at the same time, they communicate and learn from each other in the process of teamwork, which develops their collaborative skills.

2.3 Traditional Learning

Definition:

Department of Academic Affairs (2001) defines learning in the traditional mode as teacher-centered learning in which teachers complete the teaching according to the teaching manual, the content of the textbook, and the exercises. Teachers impart knowledge by teaching and explaining in the classroom, and students learn with the teacher in the classroom and finally summarize together.

Teaching steps:

Aporn Chaithieng (1994) proposed 3 steps in the traditional teaching model:

The first step:

Teaching preparation stage, in this stage, you need to prepare the following:

1. Get to know the students

2. Prepare teaching content according to the characteristics of students 3. Prepare for class questions

4. Have your textbooks ready

5. Be prepared for how to assess learning.

Step 2: Teaching phase, including the following:

1. Course introduction, for learners to review the content of the previous course, and lead to the content of this course.

2. Teaching process

1) Explain the learning objectives and content framework of this lesson.

2) Explain the course content, organize students' learning, and observe students' learning.

3) Ask questions to stimulate students' interest in learning and review for subsequent quizzes.

3. The end stage

1) Summarize the learning content of the course

2) Students ask questions

3) Assign tasks and homework

4) Arrange the preview content for the next class.

Step 3: Evaluation Phase

1) Check the student's study notes

2) Ask the content of the handout

3) Additional tests and exercises

Combined with the above content, the traditional learning method is attributed to the organization of learning activities according to the traditional teaching mode. Divided into the following steps:

Step 1: In the teaching preparation stage, understand the characteristics of students, refer to textbooks to prepare teaching content, prepare questions to be asked in class, and evaluate the content of learning.

Step 2: Teaching Phase

In the introduction of the course, teachers first review the knowledge they have learned for the students, and stimulate the students to learn the new course content.

During the teaching process, the teacher begins to explain the content of the new course, and organizes students' learning by explaining the content of the course and demonstrating.

In the summarization stage, teachers and students sum up the content of the lessons learned together, and teachers can consolidate knowledge by asking students and students to practice.

Step 3: Evaluation Phase Assess student performance in class, ask students questions about handouts, and do additional tests and exercises.

2.4 Learning Achievement

2.4.1 Definitions

Many scholars define achievement as:

Good & Merkel (1973) proposed that learning achievement refers to the result of testing individual ability in teaching practice.

Argyris(1960) and Arellano et al.(1998) define achievement as task-oriented behavior.

Genesee et al. (2006) Achievement broadly refers to the communication, mathematics, science, social science, and thinking skills and abilities that enable students to succeed in school and society.

From the above, it can be concluded that learning achievement is a tool to measure how much knowledge students acquire in the process of teaching and learning under the guidance of teachers. It is one of the indicators of the quality of education, and teachers must have access to a manual for measuring and evaluating learning achievement.

2.4.2 Measuring achievement

Robert L Ebel & David A Frisbie (1972) Measurement provides recognition and rewards for success in learning and teaching. Used to motivate and guide learning efforts. That is, measurements are used to make a substantial contribution to effective

teaching. The purpose of the assessment is to make a judgment about the quality or value of a student's achievement.

Department of Academic Affairs (2001) pointed out that the measurement and evaluation of achievement include both knowledge and skills, and the manifestations include morals, ethics, values, and other methods. Teachers consider choosing appropriate tests according to students' learning conditions.

Boonchom Srisaat (2002) pointed out that achievement measures are tests that measure someone's knowledge and skills in the academic field. Performance in education refers to the school's measurement of achievement in each subject based on curriculum objectives and teaching content. Divided into two criterion-referenced test and standardized test.

The most popular types of measurements are:

1. Subjective questions or essay writing. Students can write freely according to the knowledge points, which is open.

2. True or false, there are only 2 choices, and the answers have opposite meanings, such as true or false, yes or no, right or wrong, same or different.

3. Fill-in-the-blank questions, the title is incomplete, and the test taker fills in words or sentences in the blanks to make the sentences complete and correct.

4. Short answer questions, similar to fill-in-the-blank questions, ask test takers to write short answers, as opposed to subjective questions or essay writing.

5. Multiple-choice questions, either single-choice or multiple-choice questions. There are one or more correct answers and the test taker is required to think and find the correct answer.

6. Oral exam questions, usually used in language tests, to test the pronunciation of candidates.

7. Practical operation questions, aiming at a certain skill, test candidates through computer operation or hand drawing. Such as painting, vocational skills test, etc.

2.5 Learning Attitude

2.5.1 Meaning of attitude

Greenwald (2014)Attitude is a person's tendency to react positively or negatively to an object, a person, a system or an event, or to any other discernible aspect of the world.

Wegener, D. T., & Gregg, A. P. (2000) Attitude is a manifestation of people expressing their likes and dislikes through emotion, cognition and behavior. It is an internal state of man, inferred by psychologists through observation.

Richard E.Petty & Duane T.Wegener (1998) a person's attitude refers to whether a person's overall evaluation of a judgment object is good or bad, or positive or negative. Evaluate through emotions, beliefs, or past experiences and behaviors.

It can be concluded that attitude refers to a person's cognition, emotion or action towards an object, which is reflected in positive or negative ways. The positive aspects are manifested by liking, loving, agreeing, agreeing, etc., and the negative aspects are manifesting by disliking, hating, disagreeing, disapproving, etc. Students' attitudes towards learning computers in this paper means to identify students' likes and dislikes of learning computers and to make students realize the importance of learning computers.

2.5.2 Composition of attitude

Wegener, D. T., & Gregg, A. P. (2000) said that attitude consists of three parts:

1. Cognitive aspects, including ideological awareness, such as the idea of a certain thing.

2. Affective aspects, including sensory, emotional, and sympathetic nervous system activity, express positive or negative evaluations of the extremities.

3. Behavioural aspect, which includes a person's actions towards the attitude object and the intention to act, and also expresses a positive or negative evaluation of the limbs.

Preeyaporn Wongnutararot. (1991) Attitude consists of three parts:

1. The knowledge component is the understanding of knowledge, which boils down to a belief or evaluates the value of knowledge.

2. The affective component, which refers to a person's feelings and emotions about something, through evaluation to find satisfaction or dissatisfaction, like or dislike the result. For example, the attitude towards a movie is expressed through emotions, that is, whether you like the movie or not.

3. Behavioral components, usually a person's behavior tends to act according to feelings, your beliefs or your cognition or feeling of something stimulates you to act in response.

So we can know that attitude includes knowledge, emotion and behavior.

2.5.3 Measuring attitude

LeandreR.Fabrigar et al. (2005) Attitude measures are divided into structured measures and unstructured measures. Structured measurements provide respondents with limited answers to choose from and are closed-ended. Unstructured measurements allow respondents to express their attitudes and thoughts, and are open-ended.

The measurement procedures are:

1. Thurstone Equal-Appearing Intervals (EAI) contains 11 levels from extremely negative to extremely positive, 1 represents extremely negative, 11 represents extremely positive, and 6 represents intermediate opinion.

2. Likert Summated Rating is one of the most popular measurement procedures, stated through 5 grades. A score of 5 means strongly agree, 4 means agree, 3 means not sure, 2 means disagree, and 1 means strongly disagree. Negative items scored 5 strongly disagree, 4 disagree, 3 unsure, 2 agree, and 1 strongly agree. For example, someone who strongly agrees with all positive items and strongly disagrees with all negative items on 20 Likerts will receive 100 points.

ChavalitChookampang (2012) proposes tools for measuring attitudes:

1. Observation: Attitudes are detected by observing language and actions, for example, teachers observe students' classroom discipline behavior to measure whether students are interested in learning.

2. Interviews: Teachers use interviews to understand students' attitudes toward what they have learned.

3. Create a rating scale: Likert, Thurstone and Osgood, tools used to measure attitudes, interests and morals, the more commonly used Likert. This study used a Likert 5-point rating scale to measure students' attitudes toward learning computers.

2.6 Related Research

With regard to task-based learning, many researchers around the world have conducted research on it, and the scope of research and application involves various aspects, such as language learning, medical training, and more practical disciplines. The applicable subjects of the study are from middle and primary school students to higher education students.

Wiriyakarun(2001) discussed student responses to task-based learning. The researchers looked at students' attitudes and feelings about two application-task-based courses taught in the first semester of the 2000 academic year. Students are asked to recall their language learning experiences in secondary school through three guiding questions. The other three questions asked students to reflect on the new task-based curriculum. Surveys show that students respond positively to task-based courses. The performance is as follows: 1. Students prefer a learner-centered approach to learning rather than the traditional handout-based approach. 2. Teachers ask them to learn "how to study" rather than rote memorization for exams. 3. Enhance collaboration and peer assistance, and enhance communication between teachers and students. 4. Improve language communication skills and critical thinking skills.

Tavee Netisingha (2004) studied the use of task-based learning to improve the listening and speaking skills of undergraduates at Chiang Mai University. The target

group is 13 undergraduate students taking the 001310 (Oral Expression II) fourth course at Chiang Mai University in the first semester of the 2003 academic year. The research time is a semester-long activity from June 5 to September 4, 2003. The tools used are 12 lesson plans for task-based learning, lesson plan evaluation form, reflection writing, oral presentation, and interview. The results showed that all 12 task-based learning instructional programs were effective, with regard to students' listening and speaking skills, with improvements in fluency, accuracy, and comprehension, respectively.

Purdam (2016) explore the application of task-based learning methods to social science research methods. It examines how TBL is designed and incorporated into social science research methods training, how TBL encourages students to take responsibility, and what additional requirements are placed on lecturers and students. Through 2 cases: 1) Guide undergraduate students to use online software to collect and analyze Twitter data through a task. 2) The task of graduate students is to design, interview, and conduct online surveys in the course. The TBL intervention in Case 1 developed students' skills in accessing and analyzing social media data. Case 2 intervened in the design of research methods and statistics for the MSc in Social Sciences program, interviews and online surveys. Practice has proved that TBL can provide useful value for social science research by integrating knowledge, practice, and critical thinking in the curriculum, and can also change the classroom culture, allowing students to learn through participation in practice, and the effect is better.

Menglan.Luo (2018) studied the development of communicative ability and attitude toward Chinese language of secondary school’s student 5 based on task-based language teaching. Target groups were Mathayomsuksa 5th grade students, Chinese Language Program, Sarakham Pittayakhom School, Muang District, Maha Sarakham Province, Office of Secondary Education Service Areas, Region 26, semester 1 of the 2017 academic year, amounting to 10. Person. The research tools include 5 task-based language teaching lesson plans, Chinese Listening Comprehension Test, Chinese

Speaking Comprehension Assessment Form, Chinese Reading Comprehension Test, Chinese Writing Comprehension Test, and a questionnaire on students' perceptions of Chinese. Statistics used are percent, mean, standard deviation, Wlcoxon Matched Pairs sing- rank Test. In the measurement results, the effectiveness of the task-based language teaching lesson plan is 80.05/77.30, which is higher than the standard 75/75; the students' Chinese communicative listening test before and after class is 54.90 and 80.50, and the listening ability after class is significantly higher than that in class at the level of 0.05 forward. The Chinese reading ability test of students before and after class is 37.60 and 76.60, and the reading ability after class is significantly higher than that before class at the level of 0.05. The scores of the Chinese writing ability test before and after class are 17.90 and 74.90, and the writing ability after class is significantly higher than that before class at the level of 0.05. The average score for Chinese learning attitude was 4.12, indicating that students rated the task-based Chinese learning attitude very highly.

HaiHe.Liu & YuSheng.Su (2018) studied the effectiveness of using task-driven classroom teaching on students' learning attitudes and learning information technology courses. The experimental class is taught by the task-driven teaching method, and the control class is taught by the traditional teaching method. The average score of the experimental class was 90 and the average score of the control class was 82. The overall score of the experimental class was significantly higher than that of the control class, which proved that task-driven classroom teaching can effectively improve students' understanding and memory of applied knowledge. In terms of learning attitude, the t-test analysis method was used. The average student's attitude towards information technology in the experimental class was 10.67, compared with 9.95 in the control class, and the standard deviation was 5.086, which confirmed that the experimental class had a higher acceptance of information technology than the control class.

Jing Han (2020) studied the application of task-driven teaching method in the teaching of information technology in secondary vocational schools. The experimental results show that the theoretical foundation score of the experimental class is higher than that of the control class, and the practical operation score is 11 points higher than that of the control class, $P<0.05$, there is a significant difference, which proves that the teaching effect of the task-driven teaching method is good.

From the above researches, it can be concluded that task -based learning is conducive to improving students' learning achievement. As a learning method, it can effectively improve students 'understanding and application of knowledge, and students' attitudes towards learning have also improved. Therefore, researching and applying task -based learning in the “Computer Application Fundamentals “course is feasible.

CHAPTER III

RESEARCH METHODS

Combined with the teaching objectives, teaching objects, teaching content, teaching process, and teaching evaluation of the "Computer Application Fundamentals" course, implement the task-based learning method for the "Computer Application Fundamentals" course teaching design. And try to use this method in the course teaching "Computer Application Fundamentals". After the classroom teaching practice activities, use questionnaires and evaluation scales to obtain data, analyze the obtained data, and test the implementation effect.

The steps to follow are as follows:

3.1 Population and Sample

3.2 Research Tools

3.3 Tool Creation and Quality Inspection

3.4 Research Process

3.5 Data Collection and Data Analysis

3.6 Statistics used in the study

3.1 Population and Sample

The population used in this study is the first-year students majoring in mathematics education at a university in Guangxi, South China, in the 2023 academic year, there are 3 classes with 95 students.These 95 people are from all over the country. The minimum score of the college entrance examination score is 464 points and the highest score is 517 points. According to the college entrance examination score, students are disrupted and scattered into 3 classes.

The sample groups used in this study were 30 students in class 1 and 32 students in class 2 studying mathematics education at a university in Guangxi Province, South China, in the 2023 academic year. Random sampling is as follows:

The experimental class is composed of 30 students in class 1, applying task-based learning technology. The control class consisted of 32 students in class 2, and their learning was managed according to traditional learning.

Table 7 the demographics of the study participants

sample		male	female	Total population
experimental class	Number of participants	11	19	30
	percentage	36.7%	63.3%	100%
	age group	18 to 19 years old		
control class	Number of participants	12	20	32
	percentage	37.5%	62.5%	100%
	age group	18 to 19 years old		

3.2 Research Instrument

The instruments used in this study include:

Task-based learning lesson plans and traditional learning lesson plans in excel learning.

Use the task-based learning method to develop lesson plans, each lesson plan is 3 class hours, a total of 4 lesson plans, and 12 class hours.

Use traditional learning method to develop lesson plans, each lesson plan is 3 class hours, a total of 4 lesson plans, and 12 class hours.

2. Learning achievement test paper.

The pre-test and post-test of learning achievement were done for the experimental group and control group where task-based learning and traditional learning were located.

3. Learning attitude questionnaire towards Computer Learning.

A learning attitude questionnaire was developed for the experimental group to investigate whether students' learning attitudes towards computers improved after task-based learning activities.

3.3 Create the instrument and check it

3.3.1 Create a Learning Lesson Plan

Develop task-based learning lesson plans and traditional learning lesson plans respectively, with a total of 8 plans, the steps are as follows:

1. Study the textbook "Fundamentals of University Computer Applications".

2. Study the syllabus of the school's Computer Application Fundamentals course.

3. Study the NCRE exam syllabus.

Study the above documents to understand the learning content of the first-year students in the fourth chapter of the Computer Application Fundamentals course, the spreadsheet processing software Excel, the standards for measuring learning, and the student's thoughts on computer learning.

4. Study the knowledge of task-based learning and traditional learning and how it can be applied in teaching.

5. Divide the learning content of the spreadsheet processing software excel in Chapter 4 into 4 topics, each class is 3 hours, a total of 12 hours. The table1-8 analyzes the relationship between the learning content of the spreadsheet processing software excel and the expected learning achievement in the Computer Application Fundamentals course.

Table 8 the relationship table between Excel learning content and expected learning achievement

section	content	concept	Expected Learning Outcomes
1	Basic Operations of Excel Spreadsheets	1. Introduce the user interface of Excel 2. Sheet 3. Data input and	1. Students can describe the importance of the excel spreadsheet program and understand

section	content	concept	Expected Learning Outcomes
		modification	the user interface of excel. 2. Students can create, move, copy, delete, and rename sheets; 3. Students can input data in various formats, move and copy data, automatically fill in special data, and modify data content (font size, color, etc.)
2	Sheet Formatting Operations	1. Cell format settings 2. Style settings 3. Page settings	1. Students can insert, delete, move and other operations on sheet rows, columns and cells. 2. Students can use "Format Cells" to format the sheet's fonts, values, etc. 3. Students can conditionally format data 4. Students can set sheet pages, such as margins, paper orientation, paper size, print area, etc.
3	Use of formulas and charts	1. Apply formulas and functions in calculations 2. Apply the chart function	1. Know and understand the use of formulas and functions. 2. Students have the skills to use formulas and functions as required. 3. Students understand the application of charts, can create charts and edit them, such as changing chart titles,

section	content	concept	Expected Learning Outcomes
			legend positions, chart styles, etc.
4	Excel data statistics and analysis	Sort, filter, subtotal, create pivot tables	Students can sort, filter, subtotal, and initially learn pivot tables on data.

6. Taking the spreadsheet processing software excel as the theme, writing task-based learning lesson plans according to task-based learning methods, and formulating traditional learning lesson plans based on traditional learning methods.

7. Submit the learning lesson plan to the dissertation supervisor, consider the quality and applicability of the learning lesson plan, and revise it according to the dissertation supervisor's suggestion.

8. Submit the learning lesson plan to the dissertation consultant, invite 5 experts to evaluate it, evaluate the quality of the learning lesson plan, and evaluate it in terms of accuracy, applicability, clarity, and feasibility. The evaluation experts are as follows:

1) Xiude Nong: Full-time teacher and associate professor of the School of Mathematics, Physics and Electronic Information Engineering, Guangxi Minzu Normal University.

2) Yu Jianfang: Director and lecturer of the Computer Application Basic Teaching and Research Section of the School of Mathematics, Physics, and Electronic Information Engineering, Guangxi Minzu Normal University.

3) Jiarong Zhu: full-time teacher and associate professor of the School of Mathematics, Physics and Electronic Information Engineering, Guangxi Minzu Normal University, editor-in-chief of the textbook " Fundamentals of University Computer Applications".

4）Yuelan Huang: The School of Cursion and Electronic Information Engineering, Guangxi Minzu Normal University for Nationalities, courses and teaching, associate professor.

5）Jiafu He: Teaching method teacher and associate professor at the Art College of Guangxi Minzu Normal University.

9. Create a learning lesson plan evaluation scale and distribute it to thesis consultants. The evaluation scale is measured using the Likert scale method, which has 5 levels, namely:

5 means the most suitable

4 means very suitable

3 means moderately suitable

2 means inappropriate

1 means least suitable

10. Recycling the learning lesson plan evaluation scale, which is divided into 5 levels according to the Likert method, and the average value is taken to verify the accuracy and applicability of the learning content, and then the average value is interpreted. The standards are as follows:

4.51-5.00 means the most suitable

3.51-4.50 means very suitable

2.51-3.50 means moderate fit

1.51-2.50 means less suitable

1.00-1.50 means least suitable

The average value >=3.51 means that the quality of the learning lesson plan is very suitable under the level 5 standard, and learning activities can be organized. The expert evaluation index of task-based learning lesson plans collected at this stage is between 4.38-5, higher than 3.51. The analysis results show that the evaluation results of task-based learning lesson plans for Computer Application Fundamentals Course are suitable and can be used in the teaching of Computer Application Fundamentals

Course; The expert evaluation index of traditional learning lesson plans is between 4.24-5, which is higher than 3.51, indicating that the evaluation results of traditional learning lesson plans for Computer Application Fundamentals Course are also appropriate and can be used for teaching Computer Application Fundamentals Course.

11. Implement learning lesson plans that have been evaluated by experts. It was applied to 30 students in class 1 and 32 students in class 2 of grade 2022 in the mathematics education major of Guangxi Minzu Normal University in South China in the 2023 school year to conduct experiments.

3.3.2 Create a test paper

There are 30 multiple-choice questions, 4 options, 2 major Excel operation questions. Follow these steps:

1. Study the textbook "Fundamentals of University Computer Applications" to measure the learning achievement of the Computer Application Fundamentals course.

2. Study the Computer Application Fundamentals course syllabus and exam syllabus published by the school as a method of research to create a test.

3. Study the examination paper testing requirements issued by the school and select examination questions.

4. Determine the topics and content to be measured, and analyze the relationship between the topics.

Table 9 Analysis of the relationship between learning content, learning achievement and the number of exams

content	learning result	The teacher	class time	number of exams	
				Creation times	Actual use times
Basic operation of excel	1. Students can describe the importance of the excel spreadsheet program and	Yeyan Lu	2nd week of May	11	8

content	learning result	The teacher	class time	number of exams	
				Creation times	Actual use times
spreadsheet	understand the user interface of excel. 2. Students can create, move, copy, delete, and rename worksheets; 3. Students can input data in various formats, move and copy data, automatically fill in special data, and modify data content (font size, color, etc.)		2023		
Sheet Formatting Operations	1. Students can insert, delete, move and other operations on sheet rows, columns and cells. 2. Students can use "Format Cells" to format the sheet's fonts, values, etc. 3. Students can conditionally format the data. 4. Students can set sheet pages, such as margins, paper orientation, paper size, print area, etc.	Yeyan Lu	3rd week of May 2023	11	8
Use of formulas and charts	1. Know and understand the use of formulas and functions. 2. Students have the skills to use formulas and functions as required. 3. Students understand the application of charts, can create charts and edit them, such as changing chart titles, legend positions, chart styles, etc.	Yeyan Lu	Fourth week of May 2023	10	7
Excel data statistics and analysis	Students can sort, filter, subtotal, and initially learn pivot tables on data.	Yeyan Lu	First week of June 2023	10	7

5. Submit the learning achievement test questions and the learning achievement test evaluation form to the dissertation tutor and 5 experts for evaluation to evaluate the consistency between each test topic and learning outcomes. To apply the IOC project goal consistency index, the criteria are as follows:

+1 when determining that the item can measure the intended purpose

0 When not sure if the item can measure the intended purpose

-1 when it is determined that the item does not measure the intended purpose.

The evaluation experts are as follows:

1) Xiude Nong: Full-time teacher and associate professor of the School of Mathematics, Physics and Electronic Information Engineering, Guangxi Minzu Normal University.

2) Yu Jianfang: Director and lecturer of the Computer Application Basic Teaching and Research Section of the School of Mathematics, Physics and Electronic Information Engineering, Guangxi Minzu Normal University.

3) Jiarong Zhu: full-time teacher and associate professor of the School of Mathematics, Physics and Electronic Information Engineering, Guangxi Minzu Normal University, editor-in-chief of the textbook " Fundamentals of University Computer Applications".

4）Yuelan Huang: The School of Cursion and Electronic Information Engineering, Guangxi Minzu Normal University for Nationalities, courses and teaching, associate professor.

5）He Jiafu: Teaching method teacher and associate professor at the Art College of Guangxi Minzu Normal University.

6. Recycle the learning achievement test paper evaluation scale evaluated by experts, and find the IOC value of the learning achievement test questions through the Index of Item Objective Congruence. When the IOC value ranges from 0.5 to 1.00, it means that the created test is consistent. After statistical analysis, it is concluded that

the range of the Index of Item Objective Congruence (IOC) is between 0.8-1, and the IOC results show that all items are suitable for testing.

7. Send the modified test paper to the non-sample group for testing, and check the difficulty (p) and discrimination (r) of the test paper. The test difficulty (p) of 30 items is between 0.37-0.83, and the test discrimination (r) of 30 items is between 0.22-0.56.

8. Publish the test papers that have passed the quality inspection to the sample group for testing

9. Recycle the test paper and analyze the data.

3.3.3 Develop a Learning Attitude Questionnaire

1. Study how to construct a learning attitude questionnaire, and plan to use the Likert scale method, the level ranges from 5-1, 5 = very agreed, 4 = agree, 3 = neutral, 2 = disagree, 1 = very disagree.

2. Submit the learning attitude questionnaire to the dissertation tutor, and revise the questionnaire according to the tutor's suggestion.

3. Submit the revised learning attitude questionnaire to experts to evaluate the feasibility of the learning attitude questionnaire. Finding the IOC value of the questionnaire test through consistency index data, when the range of the IOC value is between 0.5-1.00, it means that the created questionnaire is feasible. The expert index IOC value recovered this time is between 0.6-1.00, which proved that it can be used to evaluate the learning attitude of basic computer application courses.

Evaluation experts in psychology are as follows:

1）Fang Yu: Lecturer of Guangxi Minzu Normal University.

2) Lingzhi Huang: Teacher, lecturer and psychological consultant of Guangxi Minzu Normal University.

3) Changying Luo: Teacher, lecturer and psychological consultant of Guangxi Minzu Normal University.

4) Yuxian Nong: full-time counselor and lecturer of Guangxi Minzu Normal University.

5) Lina Wu: Teacher and lecturer of Guangxi Minzu Normal University.

4. Using the IBM SPSS Statistics 23 to analyze the reliability and validity of the questionnaire, the reliability is 0.927, which is higher than 0.8 and is at the highest level. The validity is 0.703, which is between 0.7-0.8, indicating that the validity is good.

5. Publish the revised learning attitude questionnaire suggested by experts to the sample group for testing.

6. Recycling the test data, analyze the scores of the learning attitude questionnaire, and obtain the results.

3.4 Research Process

This study is an experimental study, which is carried out according to the following steps:

Step 1: In the planning stage, the learning lesson plans for task-based learning and traditional learning, learning achievement test papers and learning attitude questionnaire are prepared.

Step 2: Implementation stage. In this stage, the experimental class and the control class conduct a pre-test, implement the teaching according to the set learning lesson plan, conduct a post-test after the teaching, and distribute the learning attitude questionnaire.

Step 3: Analyze the resulting data received. At this stage, the students' learning achievement is analyzed and the learner's learning attitude is assessed.

Step 4: Teaching reflection stage. Draw conclusions from data analysis and reflect on next steps for improvement.

3.5 Data collection and data analysis

The data collection process is as follows:

1. Use the learning achievement test paper to conduct a pre-test on the sample.

2. Use task-based learning and traditional learning lesson plans to implement teaching and collect process data.

3. After the classroom teaching is implemented, the post-test is carried out on the samples with the same set of learning achievement test paper as the pre-test.

4. Use questionnaires to investigate students' learning attitude.

Data analysis:

1. Use basic statistical analysis, namely percentage, mean and standard deviation to represent the results of the learning achievement test.

2. Tool quality analysis：

Finding reliability in learning lesson plans.

Use excel spreadsheet to test learning achievement.

3.6 Statistics used in the study

Basic Statistics: Percentages are expressed by the following formula (Frederick J.Gravetter, 2008)

$$P(100) = \frac{f}{N}(100)$$

Where p is the percentage value

f is the frequency.

N is the total number of individuals.

The mean is expressed by the following formula(Wei Xue, 2004)

$$\bar{X} = \frac{\sum_{i=1}^{N} X_i}{\mathrm{N}}$$

Where $\bar{X}$ is the mean.

$\sum_{i=1}^{n} X_i$ represents the sum of all data.

N represents the number of students.

The standard deviation is expressed by the following formula(Wei Xue, 2004):

$$S.D.=\frac{\sqrt{\sum_{i=1}^{N}(X_i-\bar{X})^2}}{N-1}$$

Where S.D. is the standard deviation.

$\bar{X}$ is the mean.

$\sum_{i=1}^{n} X_i$ represents the sum of all data.

N represents the number of students.

Statistics used to test hypotheses:

To compare the pre-test and post-test learning achievement of task-based learning and traditional learning, it is planned to use IBM SPSS Statistics 23 to analyze the statistics by using independent sample t-test.

CHAPTER IV RESULTS

This study aims to compare the learning achievement and learning attitudes of students in task-based learning and traditional learning in the Computer Application Fundamentals Course at Guangxi Minzu Normal University. The research purposes are 1）to compare learning to learning achievement under task-based learning and traditional learning activities.2）to investigate students' attitudes towards computer learning after task-based learning. To develop the research purposes, the researcher implemented teaching according to the research process designed in Chapter 3, and the research results were derived from the following research tools, including teaching plans, learning achievement tests (pre-test and post-test), and learning attitude questionnaires. This chapter makes a comparative analysis of the obtained teaching data, including the analysis of the teaching plan implementation evaluation results, the comparative analysis of the post-test of learning achievement, and the data analysis of the learning attitude questionnaire.

Data analysis results:

4.1 Evaluation of the implementation process of the lesson plan

Table 10 task-based learning activity evaluation results

No.	Lesson plan 1			Lesson plan 2			Lesson plan 3			Lesson plan 4			Total	%
	Classwork	homework	Student behavior	Classwork	homework	Student behavior	Classwork	homework	Student behavior	Classwork	homework	Student behavior		
full score	40	16	9	18	12	9	18	6	9	10	8	9	164	100%
1	35	14	9	13	12	9	14	5	8	7	7	9	142	87%
2	35	13	9	13	12	9	14	6	9	7	7	9	143	87%
3	35	14	9	13	12	9	14	6	9	7	7	8	143	87%
4	35	16	9	13	12	9	14	6	9	7	7	9	146	89%
5	35	16	9	13	12	9	14	6	9	7	8	9	147	90%
6	35	16	9	13	12	9	14	6	9	7	8	9	147	90%
7	33	15	9	16	12	9	14	6	9	8	8	9	148	90%
8	33	13	9	16	12	9	14	6	9	8	8	9	146	89%
9	33	13	8	16	12	9	14	5	8	8	6	7	139	85%
10	33	15	9	16	12	9	14	6	9	8	8	9	148	90%
11	33	16	9	16	12	9	14	6	9	8	8	9	149	91%
12	33	14	9	16	12	9	14	6	9	8	6	9	145	88%

No.	Lesson plan 1			Lesson plan 2			Lesson plan 3			Lesson plan 4			Total	%
	Classwork	homework	Student behavior	Classwork	homework	Student behavior	Classwork	homework	Student behavior	Classwork	homework	Student behavior		
13	36	16	9	15	12	9	14	6	9	8	7	9	150	91%
14	36	15	9	15	12	9	14	6	9	8	8	9	150	91%
15	36	13	9	15	12	9	14	6	9	8	8	9	148	90%
16	36	15	9	15	12	9	14	6	9	8	6	9	148	90%
17	36	16	9	15	12	9	14	6	9	8	8	9	151	92%
18	36	16	8	15	12	9	14	5	9	8	6	7	145	88%
19	37	16	9	15	12	9	15	6	9	9	8	9	154	94%
20	37	14	9	15	12	9	15	6	9	9	8	9	152	93%
21	37	15	9	15	12	9	15	6	9	9	8	9	153	93%
22	37	15	9	15	12	9	15	6	9	9	8	9	153	93%
23	37	16	9	15	12	9	15	6	9	9	8	9	154	94%
24	37	14	9	15	12	9	15	5	9	9	8	9	151	92%
25	34	15	9	14	12	9	13	6	9	8	8	9	146	89%
26	34	14	9	14	12	9	13	6	8	8	8	8	143	87%
27	34	16	9	14	12	9	13	6	9	8	8	9	147	90%
28	34	15	8	14	12	9	13	5	8	8	6	8	140	85%

No.	Lesson plan 1			Lesson plan 2			Lesson plan 3			Lesson plan 4			Total	%
	Classwork	homework	Student behavior	Classwork	homework	Student behavior	Classwork	homework	Student behavior	Classwork	homework	Student behavior		
29	34	15	9	14	12	9	13	5	9	8	8	9	145	88%
30	34	16	9	14	12	9	13	6	9	8	8	9	147	90%
Sum	1050	447	267	438	360	270	420	174	266	240	225	263	4420	90%
$\bar{X}$	35.00	14.90	8.90	14.60	12.00	9.00	14.00	5.80	8.87	8.00	7.50	8.77	147.3	90%
S.D.	1.438	1.032	0.305	1.037	0	0	0.643	0.407	0.346	0.643	0.777	0.568		

%=total/full score, if %> 70%, It means that learning activities are effective. The minimum value of the evaluation results in table 10 is 85 %,> 70%, so task-based learning activities are effective.

Table 11 traditional learning activities evaluation results

No.	Lesson plan 1			Lesson plan 2			Lesson plan 3			Lesson plan 4			total	%
	Classwork	homework	Student behavior	Classwork	homework	Student behavior	Classwork	homework	Student behavior	Classwork	homework	Student behavior		
full score	40	16	9	18	12	9	18	6	9	10	8	9	164	100%
1	30	14	8	13	10	8	12	5	8	7	7	8	130	79%
2	29	14	8	13	11	8	13	5	8	7	7	8	131	80%

No.	Lesson plan 1			Lesson plan 2			Lesson plan 3			Lesson plan 4			total	%
	Classwork	homework	Student behavior	Classwork	homework	Student behavior	Classwork	homework	Student behavior	Classwork	homework	Student behavior		
3	30	16	8	12	11	8	11	5	8	7	7	8	131	80%
4	30	14	9	13	12	9	12	6	9	7	7	9	137	84%
5	30	14	9	13	12	9	13	6	9	7	8	9	139	85%
6	33	14	9	14	12	9	13	6	9	7	8	9	143	87%
7	33	16	8	14	11	8	13	6	8	7	7	8	139	85%
8	31	15	9	15	11	9	12	6	9	7	7	9	140	85%
9	32	15	8	13	11	8	13	6	8	7	7	8	136	83%
10	33	16	8	14	12	9	13	6	9	7	6	9	142	87%
11	30	16	9	14	12	9	13	6	9	7	8	9	142	87%
12	30	15	9	12	11	9	14	6	9	7	8	9	139	85%
13	29	13	8	13	12	8	14	6	8	7	8	9	135	82%
14	29	13	9	11	12	9	13	6	9	7	8	9	135	82%
15	29	13	8	14	10	8	13	5	8	7	7	8	130	79%
16	30	13	9	15	12	9	14	6	9	7	8	9	141	86%
17	31	13	8	14	12	8	13	6	8	7	8	9	137	84%
18	29	13	9	15	12	9	13	6	9	7	8	9	139	85%
19	35	16	9	13	11	9	13	6	9	7	8	9	145	88%

No.	Lesson plan 1			Lesson plan 2			Lesson plan 3			Lesson plan 4			total	%
	Classwork	homework	Student behavior	Classwork	homework	Student behavior	Classwork	homework	Student behavior	Classwork	homework	Student behavior		
20	34	15	8	13	10	8	14	5	8	7	8	9	139	85%
21	33	16	9	14	12	9	14	6	9	7	8	9	146	89%
22	34	16	8	13	11	8	13	5	9	7	8	9	141	86%
23	34	15	8	15	12	9	12	6	9	8	6	9	143	87%
24	33	16	9	15	12	9	14	6	9	7	6	9	145	88%
25	33	16	9	13	10	8	13	5	8	7	7	8	137	84%
26	32	14	8	14	10	8	13	5	9	7	7	8	135	82%
27	31	15	9	14	12	9	13	6	9	7	7	9	141	86%
28	30	13	8	14	12	8	14	6	8	7	8	9	137	84%
29	30	14	8	15	12	8	14	6	9	7	8	9	140	85%
30	30	14	8	15	12	9	13	6	9	7	8	9	140	85%
31	30	14	9	15	12	9	13	6	9	7	8	9	141	86%
32	29	13	8	12	11	8	13	5	8	7	7	8	129	79%
Sum	996	464	271	437	365	273	418	183	276	225	238	279	4425	84%
$\overline{X}$	31.125	14.50	8.47	13.66	11.41	8.53	13.06	5.72	8.63	7.03	7.44	8.72	138.28	84%
S.D.	1.827	1.164	0.507	1.066	0.716	0.507	0.716	0.457	0.492	0.177	0.669	0.457		

%=total/full score, if %> 70%, it means that learning activities are effective. The minimum value of the evaluation results in table 11 is 79 %,> 70%, so traditional learning activities are effective.

From table 10 and table 11, the average score of task-based learning activities is 147.3 (total score of 164), accounting for 90%, and the average score of traditional learning activities is 138.28 (total score of 164), accounting for 84%. Both are greater than 70%, and task-based learning activities are significantly better than traditional learning activities.

4.2 Comparative analysis of learning achievement

4.2.1 The analysis of the pretest learning achievement

Is there a significant difference in the use of independent-sample t test to compare the pretest results. As shown in table 12.

Table 12 independent sample T-test results of pre-test learning achievement

variable	class	N	$\bar{X}$	S.D.	t	p-value
learning achievement	experimental class	30	42.73	3.05	-.826	.412
	control class	32	43.53	4.39		

P>0.05

From table 12, the p-value of 0.412 is> 0.05, indicating that the results of the experimental class and the control class are not significantly different, and the basis of the two classes is the same.

4.2.2 The analysis of the pretest and the posttest results of task-based learning

Use the paired-samples t test to test the normal distribution of pretest and posttest of learning achievement, such as table 13.

Table 13 using t-test testing the normal distribution of learning achievement based on task-based learning about pretest and posttest.

variable	score	Shapiro-Wilk		
		statistic	df	p-value
learning achievement	pretest	.935	30	.066
	posttest	.933	30	.059

It can be seen from table 13 that the P values pretest and posttest of learning achievement are 0.066 and 0.059, which shows that the pretest and posttest results meets the normal distribution, which is statistically significant at the 0.05 level. Can use paired-samples t test.

Table 14 use the paired-samples t test to compare the task-based pretest and posttest learning achievement

variable	score	$\bar{X}$	S.D.	t	p-value
learning achievement	posttest	85.53	5.82	35.55*	.000
	pretest	42.73	3.05		

*p<0.05

From table 14, it can be concluded that the average posttest score of the experimental group is 85.53, and the pretest score is 42.73. The posttest score of the experimental group has increased by 42.8 compared with the pretest score. It shows that after task-based learning, students' learning achievement has significantly improved at the 0.05 statistical level.

The analysis of the pretest and the posttest results of task-based learning, as shown in table 15.

Table 15 analyze the learning achievement of using task-based learning pretest and posttest

No.	total score（full 100）		growth value	%
	pretest	posttest		
1	42	82	40	95.24%
2	47	86	39	82.98%
3	43	90	47	109.30%
4	49	84	35	71.43%
5	42	89	47	111.90%
6	41	86	45	109.76%
7	38	90	52	136.84%
8	42	80	38	90.48%
9	44	72	28	63.64%
10	48	90	42	87.50%
11	42	93	51	121.43%
12	46	81	35	76.09%
13	43	82	39	90.70%
14	46	83	37	80.43%
15	41	83	42	102.44%
16	42	81	39	92.86%
17	39	88	49	125.64%
18	41	72	31	75.61%
19	43	92	49	113.95%

20	40	82	42	105.00%
21	42	93	51	121.43%
22	38	90	52	136.84%
23	47	82	35	74.47%
24	48	93	45	93.75%
25	43	94	51	118.60%
26	43	89	46	106%
27	43	90	47	109.30%
28	42	78	36	85.71%
29	38	83	45	118.42%
30	39	88	49	125.64%
Sum	1282	2566	1284	100.16%

It can be seen from table 15 that the growth value of the results is between 28-52 and the lowest percentage of the results is 63.64%, the highest value is 136.84%, and the average posttest has increased by 100.16%.

4.2.3 The analysis of the pretest and the posttest results of traditional learning

Use the paired-samples t test to test the normal distribution of pretest and posttest of learning achievement, such as table 16.

Table 16 using t-test testing the normal distribution of learning achievement based on traditional learning about pretest and posttest.

variable	score	Shapiro-Wilk		
		statistic	df	p-value
learning achievement	pretest	.962	32	.308
	posttest	.992	32	.997

It can be seen from table 16 that the P values pretest and posttest of learning achievement are 0.308 and 0.997, which shows that the pretest and posttest results meets the normal distribution, which is statistically significant at the 0.05 level. Can use paired-samples t test.

Table 17 use the paired-samples t test to compare the traditional pretest and posttest learning achievement

variable	score	$\bar{X}$	S.D.	t	p-value
learning achievement	posttest	75.69	7.48	32.52	.000
	pretest	43.53	4.39		

*p<0.05

From table 17, it can be concluded that the average posttest score of the control group is 75.69, and the pretest score is 43.53. The posttest score of the control group has increased by 32.16 compared with the pretest score. After the traditional learning, students' learning achievement has significantly improved at the 0.05 statistical level.

The analysis of the pretest and the posttest results of traditional learning as shown in table 18.

Table 18 Analyze the learning achievement of using traditional learning pretest and posttest

No.	total score（full 100）		growth value	%
	pretest	posttest		
1	38	65	27	71.05%
2	47	75	28	59.57%
3	46	83	37	80.43%
4	39	73	34	87.18%
5	46	81	35	76.09%
6	49	76	27	55.10%
7	43	72	29	67.44%
8	39	72	33	84.62%
9	38	77	39	102.63%
10	48	85	37	77.08%
11	40	79	39	97.50%
12	45	66	21	46.67%
13	37	69	32	86.49%
14	36	60	24	66.67%

15	45	79	34	75.56%
16	48	76	28	58.33%
17	46	80	34	73.91%
18	55	93	38	69.09%
19	41	88	47	114.63%
20	42	78	36	85.71%
21	43	74	31	72.09%
22	47	86	39	82.98%
23	43	76	33	76.74%
24	49	83	34	69.39%
25	44	76	32	72.73%
26	39	70	31	79.49%
27	40	66	26	65.00%
28	43	76	33	76.74%
29	48	83	35	72.92%
30	39	64	25	64.10%
31	48	71	23	47.92%
32	42	70	28	66.67%
Sum	1393	2422	1029	73.87%

It can be seen from table 18 that the growth value of the results is between 21-47 and the lowest percentage of the results is 46.67%, the highest value is 114.63%, and the average posttest has increased by 73.5%.

4.2.4 Comparison of posttest learning achievement between using task-based learning and traditional learning

Use independent-samples t test to analyze the differences in posttest learning achievement based on task-based learning and traditional learning. As shown in table 19.

Table 19 Comparison of task-based learning and traditional learning posttest results

variable	class	N	$\bar{X}$	S.D.	t	p-value
learning achievement	experimental class	30	85.53	5.82	5.756*	.000
	control class	32	75.69	7.48		

*p<0.05

It can be seen from table 19 that the p-value .000<0.05 indicates that the post-test scores of the experimental class and the control class are significantly improved at the level of 0.05.

4.3 Analysis of the questionnaire

After the task-based learning activity, questionnaires were issued in the experimental class to investigate students' learning attitude. The questionnaire uses the Lockert, the level ranges from 5-1, 5 = very agreed, 4 = agree, 3 = neutral, 2 = disagree, 1 = very disagree. Table 20 and table 21 show the statistics of the questionnaire.

Table 20 descriptive statistics of learning attitude in experimental classes

project	N	$\bar{X}$	S.D.
1. Students find the "Computer Application Fundamentals Course" very interesting.	30	4.2	1.064
2."Computer Application Fundamentals Course" is important to students.	30	4.53	0.9
3. Students want to learn the course "Computer Application Fundamentals" well.	30	4.57	0.858
4. Students are satisfied with the study of the course "Computer Application Fundamentals".	30	4.27	1.015
5. Students think that the knowledge of this course can be applied to future work and life.	30	4.6	0.855
6. Students believe that the classroom discipline and learning atmosphere of the "Computer Application Fundamentals Course" is very good.	30	4.43	0.817
7. Students are happy to be able to learn the "Computer Application Fundamentals Course" in computer rooms.。	30	4.43	0.898
8. Students feel that the computer and the network of the classroom meet the requirements of learning.	30	4.43	0.858
9. Students are willing to practice practical tasks arranged by the teacher in the classroom.	30	4.27	1.015
10. Students are annoyed by the learning activities of the "Computer Application Fundamentals Course" organized by the teacher.	30	3.17	1.683

11. Students are willing to share the knowledge they learned in the classroom.	30	4.1	1.062
12. Students solve problems with their classmates in the classroom.	30	4.57	0.858
13. When students encounter difficulties, students will seek help from teachers.	30	4.67	0.802
14. Students take the initiative to learn the knowledge of the "Computer Application Fundamentals Course".	30	4.3	0.952
15. Students maintain the computer during the learning process.	30	3.87	1.306
16. Students are at a loss when studying.	30	4.3	0.952
17. Through learning, students understand more information about computers.	30	4.5	0.82
18. Students believe that learning the "Computer Application Fundamentals Course" has a positive impact on the study of other subjects.	30	4.33	0.994
19. Students can well apply the knowledge of this course to study in other subjects.	30	4.27	1.112
20. Students feel happy in learning.	30	4.23	0.971
Valid N (list wise)	30		

Table 20 shows the detailed information of each project, including the average and standard deviation, which can find the maximum value and the lowest value of the project through this table. The highest value is 4.67, and it is located in the 13th question "When students encounter difficulties, students will seek help from teachers." The minimum value is 3.17, and the 10th question "Students are annoyed by the learning activities of the ‘Computer Application Fundamentals Course’ organized by the teacher." This shows that teachers need to improve their learning, stimulate students' enthusiasm for learning, and make the class more attractive.

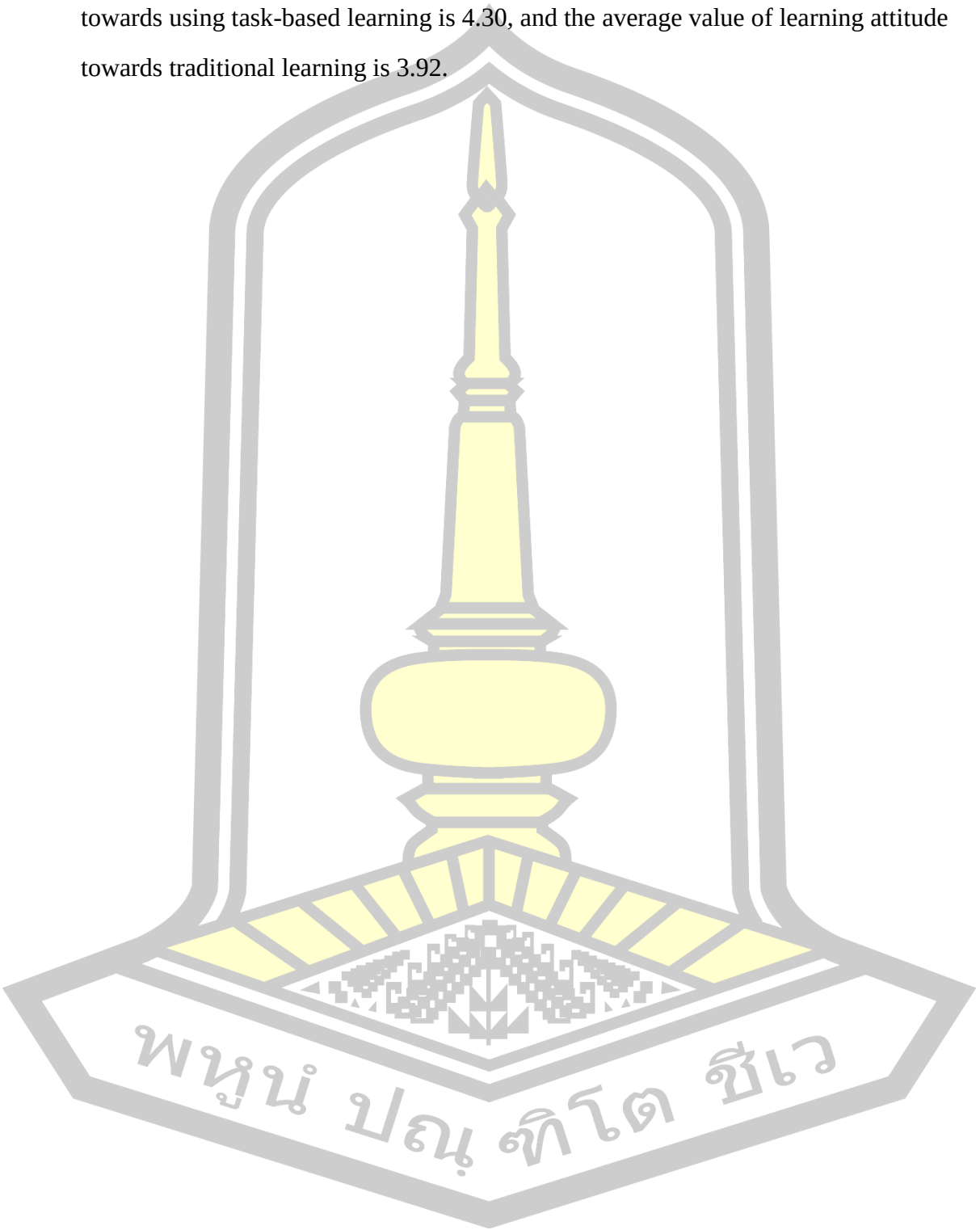
Describe the results of the questionnaire again, as shown in table 21

Table 21 analysis of learning attitudes after task-based learning and traditional learning activities

variable	class	N	$\bar{X}$	S.D.	t	p-value
Learning attitude	experimental class	30	4.30	.81	2.347*	0.022
	control class	32	3.92	.41		

*p<0.05

From table 21, it can be concluded that the average value of students' attitude towards using task-based learning is 4.30, and the average value of learning attitude towards traditional learning is 3.92.



CHAPTER V CONCLUSION AND DISCUSSION

Task-based learning have the following benefits:

1) In the process of participation, learners systematically master the process of solving tasks by learning by doing.

2) Learners can build a knowledge system and summarize their own experiences in the process of learning.

3) Master the ability to solve problems, which can usually be applied to daily work.

4) Exercise the ability of students to collaborate in groups and enrich personal knowledge in collaboration.

5) Develop good habits and know how to work systematically.

6) Ability to be creative and able to apply what they have learned to solve problems in life.

In order to improve students' learning achievement in the Computer Application Fundamentals Course, researcher used task-based learning in the teaching process. This study aims to compare the learning achievement and learning attitude between task-based learning and traditional learning in the Computer Application Fundamentals Course at Guangxi Minzu Normal University. This chapter explains the results of the study and makes some effective suggestions to develop the Computer Application Fundamentals Course.

5.1 Research Purposes

1. To compare learning to learning achievement under task-based learning and traditional learning activities.

2. To investigate students' attitudes towards computer learning after task-based learning.

5.2 Conclusion

The purpose of this research was to compare the learning achievement of the Computer Application Fundamentals Course under task-based learning and traditional learning activities and to investigate students' attitudes towards computer learning after task-based learning activities. According to the data analysis results, the following conclusions were drawn:

1. Conclusion of lesson plan execution

The average score of task-based learning activities was 147.3, accounting for 90%; the average score of traditional learning activities was 138.28, accounting for 84%, both higher than 70%, which proved that the two learning activities were effective and task-based learning was significantly higher than traditional learning.

2. Comparison of learning achievement

The post-test score of students using task-based learning was 85.53, and the post-test score of traditional learning activities was 75.69, with an average difference of 9.84. Students who use task-based learning had significantly higher learning achievement than those who use traditional learning at the level of 0.05.

3. Learning Attitude Questionnaire Conclusions

The average value of students' attitude towards using task-based learning is 4.30, and the average value of learning attitude towards traditional learning is 3.92. The students' attitude towards task-based learning is higher than that of traditional learning in the Computer Application Fundamentals Course, which is at a relatively high level.

In short, task-based learning allowed learners to achieve higher learning achievement, and learners held a high attitude towards task-based learning in computer application fundamentals course. Therefore, this teaching method is suitable for computer application fundamentals course, and teachers can develop this teaching method.

5.3 Discussion

The purpose of this research was to compare the learning achievement of the Computer Application Fundamentals Course under task-based learning and traditional learning activities and to investigate students' attitudes towards computer learning after task-based learning activities. In terms of comparison of learning achievement, the independent sample t-test was first used to compare the pre-test learning achievement of the two classes. The average score of the experimental class was 42.73, and the average score of the control class was 43.53. The P value was 0.41>0.05, indicating that there was no significant difference between the two classes at the 0.05 statistical level, proving that the learning basis of the two classes was the same. Then an independent sample t-test was used to analyze the difference in post-test learning achievement between task-based learning and traditional learning. The post-test score of the experimental class was 85.53, and that of the control class was 75.69. The average difference between the post-test scores of the experimental class and the control class was 9.84, with a significant p value of .00. The results showed that at the statistical level of 0.05, there was a significant difference in the post-test scores of the experimental class and the control class. In other words, task-based learning is better than traditional learning in improving students' learning achievement.

This result is consistent with related research on task-based learning, such as Menglan Luo (2018) the development of communicative ability and attitude toward Chinese language of secondary school’s students 5 based on task-based language teaching. After class, Chinese listening ability, reading ability and writing ability were significantly higher than their pre-class scores at 0.05 level. HaiHe.Liu and YuSheng Su (2018) studied the effect of using task-driven classroom teaching on students’ learning attitudes and learning effectiveness in an information technology course. The results showed that the comprehensive score of the experimental group was significantly higher than that of the control group. In addition, Han (2020)

researched on the application of task-driven teaching method in the teaching of Information Technology in secondary vocational schools —— taking the teaching of Computer Application Foundation as an example. The experimental results show that the theoretical foundation score of the experimental class was higher than that of the control class, and the practical operation score was 11 points higher than that of the control class, $P<0.05$, there was a significant difference, which proved that the teaching effect of the task-driven teaching method was good. Musengimana, Kampire & Ntawiha (2022) researched the effect of task-based learning (TBL) of chemistry on chemical reaction topics in Rwandan lower secondary school students, it showed that students' learning achievement in chemistry improves significantly if they are actively involved in building their knowledge.

In the study of students' attitudes towards computer learning, the average value of students' attitudes towards using task-based learning was 4.30, and the average value of learning attitudes towards traditional learning was 3.92. It showed that the students' attitude towards task-based learning was better than that of traditional learning in the Computer Application Fundamentals Course, which was at a relatively high level. It shows that students are willing to learn and help others learn together while doing tasks. The motivation and attitude of learning support the progress of tasks, making students more interested in learning. This is consistent with the research of Wiriyakarun (2001), discussed student responses to task-based learning. Surveys showed that students respond positively to task-based courses. Menglan Luo (2018) the results of learning attitude showed that the average score of learning attitude was 4.12, task-based learning attitude was relatively high, HaiHe.Liu and YuSheng Su (2018) said that in terms of learning attitude, the t-test analysis method was used. The experimental class had a higher acceptance of information technology than the control class.

5.4 Suggestions

This research aims to compare the learning achievement and learning attitudes of task-based learning and traditional learning at Guangxi Minzu Normal University, China. The results showed that the use of task-based learning activities improved students' learning achievement more than traditional learning, and students held high attitudes towards task-based learning. Therefore, based on the research results, the following recommendations are made:

Suggestions for practice

1. Teachers strengthen students' independent practice when organizing task-based learning activities, and encourage students to improve their practical skills, express their opinions, participate in discussions, and increase their knowledge in the process of participating in activities.

2. Create a good learning atmosphere and study in groups, so that every student can participate in every step of the group activities.

3. Try to apply task-based learning to Chinese students' learning of other subjects.

Suggestions for further research

Considering the level of the researcher, the time of the study and the geographical limitations of the study, the following suggestions are made:

1. In the next step, we can further expand the task-based learning method for variables such as gender and age, and study the learning situation and academic performance of students.

2. The research time of this research is only 12 class hours, which is relatively short. It is suggested to strengthen the time of task-based learning activities to make the research results more significant.

3. Mix a variety of learning methods in the teaching process, such as case-based learning and project-based learning.

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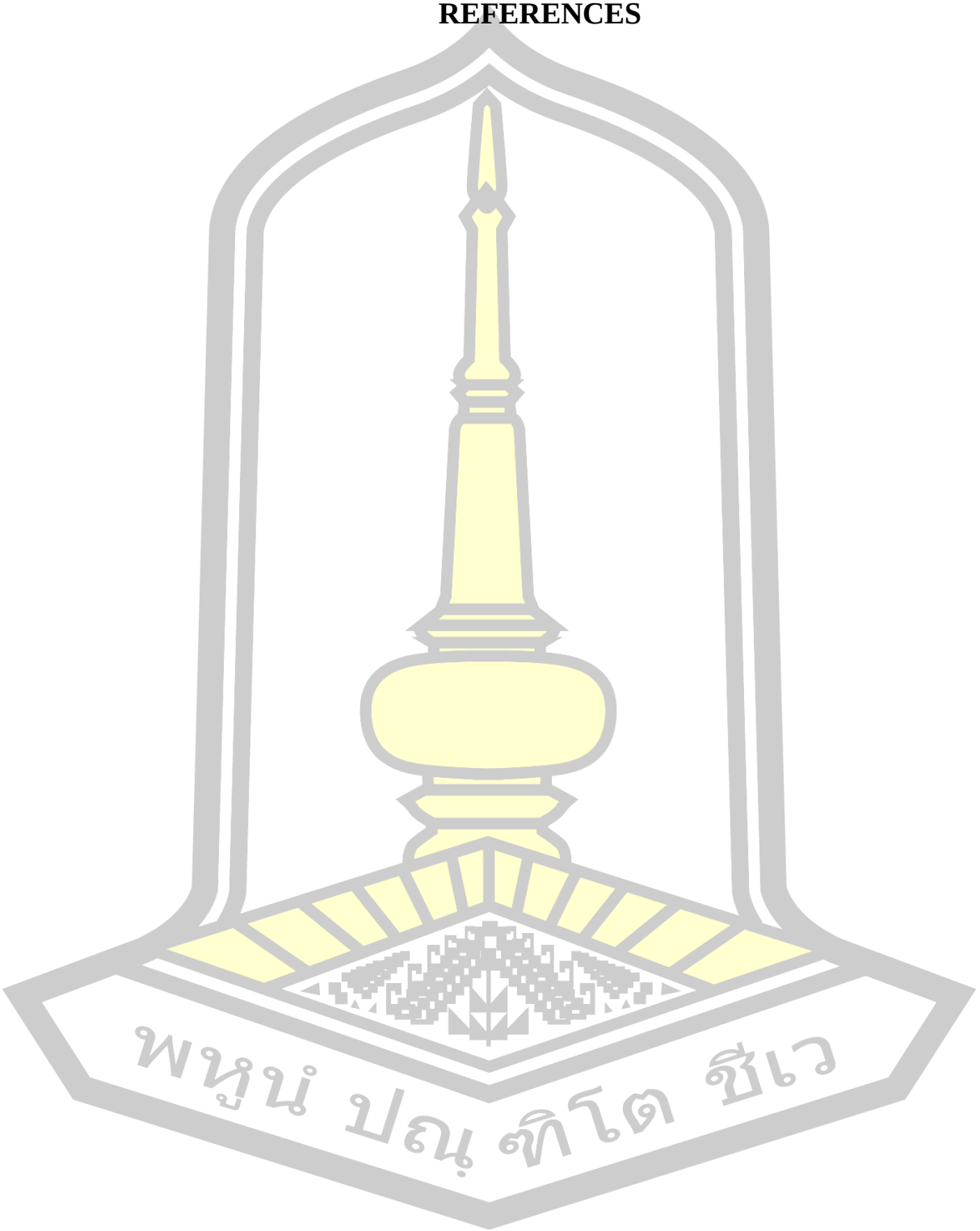

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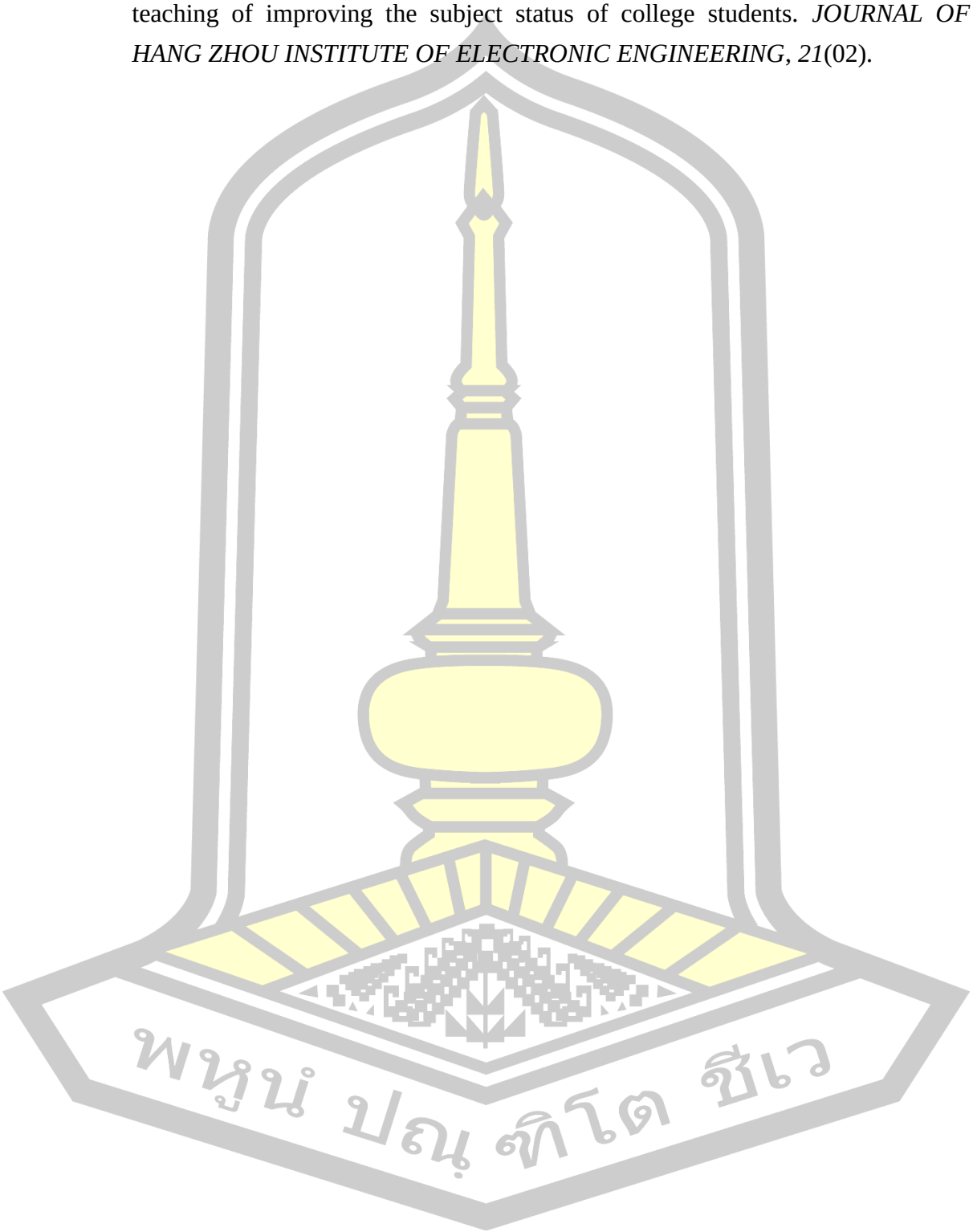
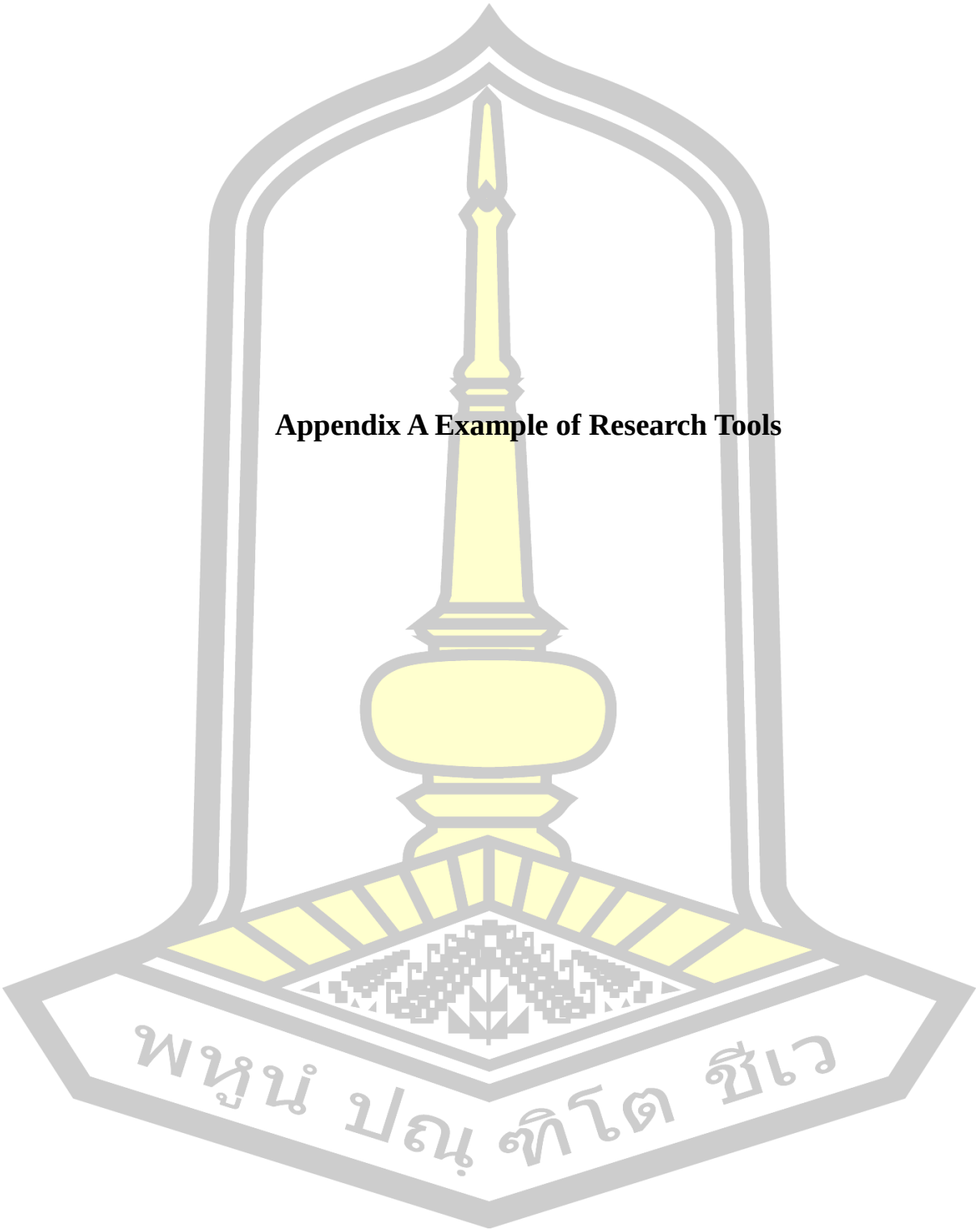
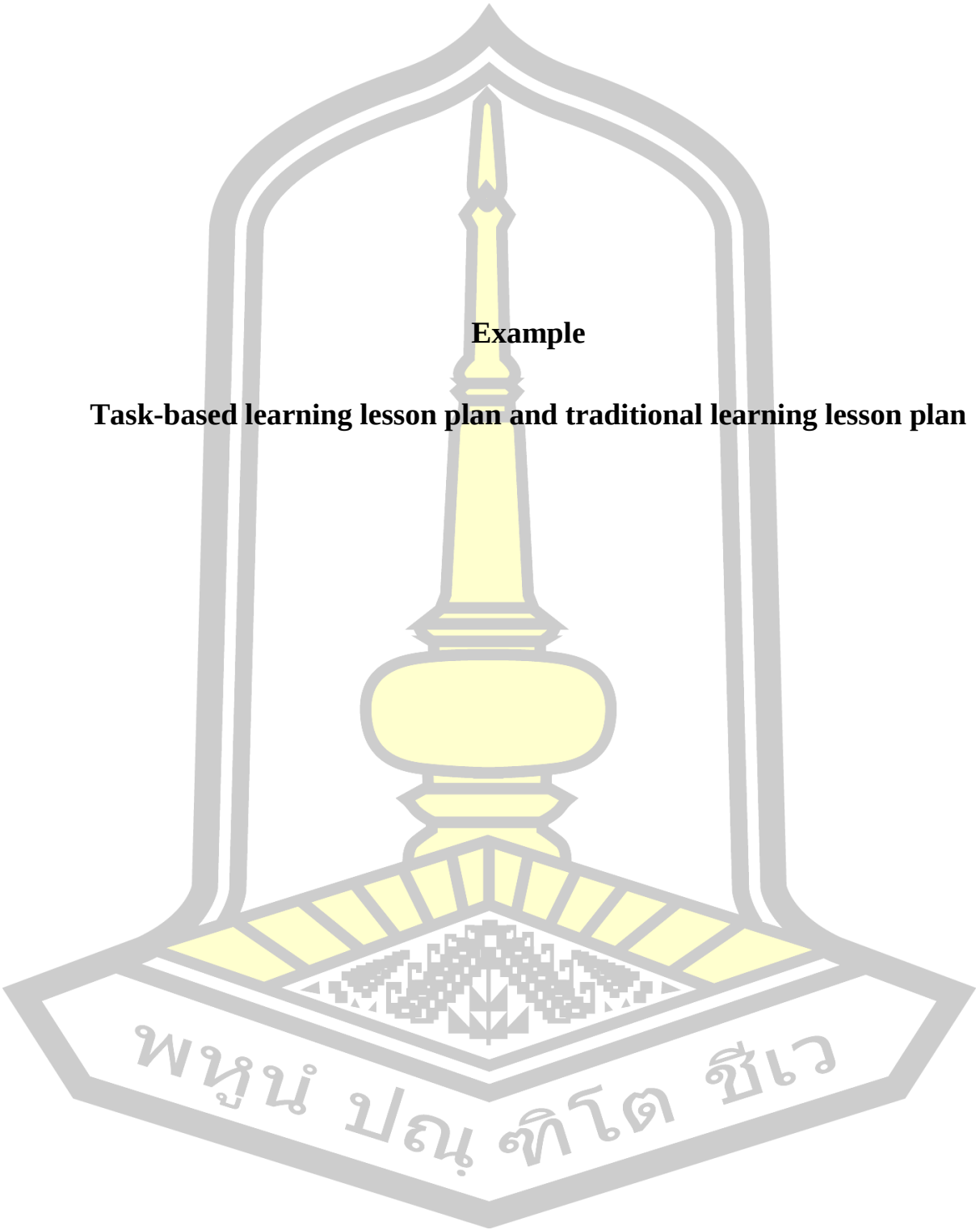




Appendix A Example of Research Tools



Example

Task-based learning lesson plan and traditional learning lesson plan

Task-Based Learning Program

Lesson plan 1

Course Name: Computer Application Fundamentals

Course Code: 130110011107

Teaching Object: Mathematics Education Class 1

School Year: The first semester of the 2022-2023 school year

Chapter: Basic Operation of Electronic Forms

Class Hours: 3 Class Hours

Learning Outcomes:

1. Understand the user interface of excel

2. Be able to perform basic operations on the worksheet

3. Enter data in the worksheet and make modifications to the data.

Nature:

Microsoft Excel, a member of Microsoft Office, is a spreadsheet processing software based on Windows. Using excel can process a large amount of data information, carry out data analysis and statistics, and also has a powerful chart function. It is a very practical office data processing software.

Learning Objectives:

Knowledge (K):

1. Understand the user interface of excel.

2. Worksheet knowledge.

3. Data input and modification.

Skills (P):

1. Students know the user interface of excel.

2. Students can perform basic operations on worksheets (create, move, copy, delete, rename, protect worksheets).

3. Students can enter data on the worksheet and edit the data.

Features (A):

1. Students abide by discipline in the classroom.

2. Students are willing to take the initiative to learn and have high enthusiasm for tasks.

Teaching focus:

1. Create, move, copy, delete, rename, and protect the worksheet.

2. Enter data in the worksheet and modify the data.

Teaching difficulties:

1. Use the "auto-fill" function to input data with certain rules.

Learning Content:

1. Create a workbook

2. Open and close the workbook

3. Understand the window composition of excel

4. Edit worksheet

5. Enter data in the worksheet (text and numeric data)

Task（classwork1）:

1. Create a workbook

Create a new workbook, name the workbook "Student Status Information Form", and save it to the desktop.

2. Open and close the workbook

Open the "Student Status Information Form" workbook and close the "Student Status Information Form" workbook.

3. Understand the window composition of excel

1) Title

2) Quick access bar

3) Function tab

4) Name box

5) Edit bar

6) Workspace

7) Sheet Tabs

4. Edit worksheet

1) Insert a new sheet

2) Rename the sheet

3) Move or copy sheets

4) Delete sheet

5) Change sheet tab color

6) Protect the sheet

5. Enter data in the sheet

1) Enter text, data

Enter the content as shown in the figure in the first row of the form, copy the contents of the "Name" and "Minzu" columns in the "Student Information Sheet", paste them into "Sheet 4", and enter the class information.

2) Enter the ID card number

Set the cell format to text, or enter the single quotation mark in the English input mode before the ID number and then enter the ID number.

3) Enter the date of birth

Enter the student's date of birth as shown in the rendering, and change all the dates to the standard date format of "year, month, and day"

4) Quickly input sequence data, and automatically fill in "Number" and "Student ID".

Enter the contents of the "Number" and "Student ID" columns by means of autofill sequence.

5) The use of data verification, use the data verification method in the "gender" column to complete the rapid input of the text of "male" and "female".

Teaching activity process:

Step 1: The teacher puts forward the task goal and explains the task content through computer demonstration:

1. Create a workbook

2. Open and close the workbook

3. Understand the window composition of excel

4. Edit sheet

5. Enter data in the sheet.

Step 2: Collaborate in groups, divide into 5 groups, 6 people in each group, and cooperate within the group to complete the task.

Step 3: Task implementation, each group does classwork 1, and can discuss freely in the class.

Step 4: Each group completes the classwork.

Step 5: The group representative summarizes and reports on the completion of the task.

Step 6: The teacher gives supplementary explanations to the reports of each group.

Step 7: The teacher and the students analyze the completion of their tasks together, and let the students continue to practice the difficult content.

1. Students are required to summarize the knowledge of this lesson, and the teacher makes a supplementary summary.

2. The teacher summarizes the important and difficult points of this lesson

3. Homework 1.

Media, learning resources and equipment:

1. A computer with Microsoft excel application software installed.

2. Textbooks.

3. Sample created from Microsoft excel program

4. Internet network.

5. Classwork 1.

6. Homework 1.

Measurement and Evaluation:

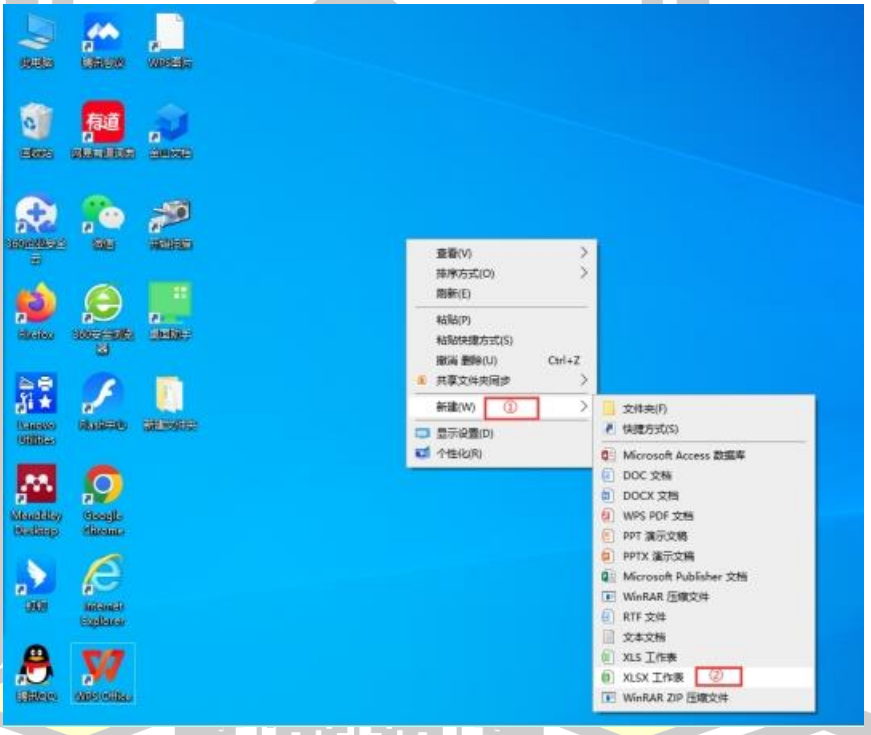
learning objectives	tool	Evaluation Standard
Knowledge (K): 1. Understand the user interface of excel 2010. 2. Worksheet knowledge. 3. Data input and modification.	Classwork 1.	Students earn a grade of 70% or higher from classwork 1
Skills (P): 1. Students know the user interface of excel 2010. 2. Students can perform basic operations on worksheets (create, move, copy, delete, rename, protect worksheets). 3. Students can enter data on the worksheet and edit the data.	homework 1	Student scored 70% or higher from homework 1
Features (A): 1. Students abide by discipline in the classroom. 2. Students are willing to take the initiative to learn and have high enthusiasm for tasks.	Student Behavior Observation Form	Students earn a score of 70% or higher from the observation sheet

Classwork 1

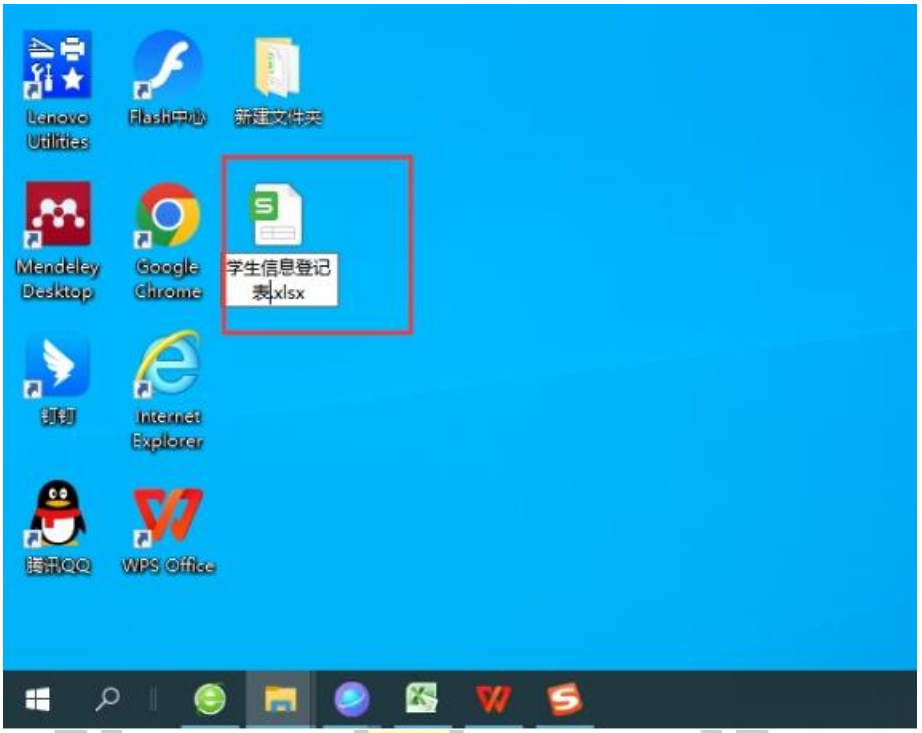
1. Create a workbook

Create a new workbook, name the workbook "Student Information Registration Form.xlsx", and save it to the desktop of the computer system.

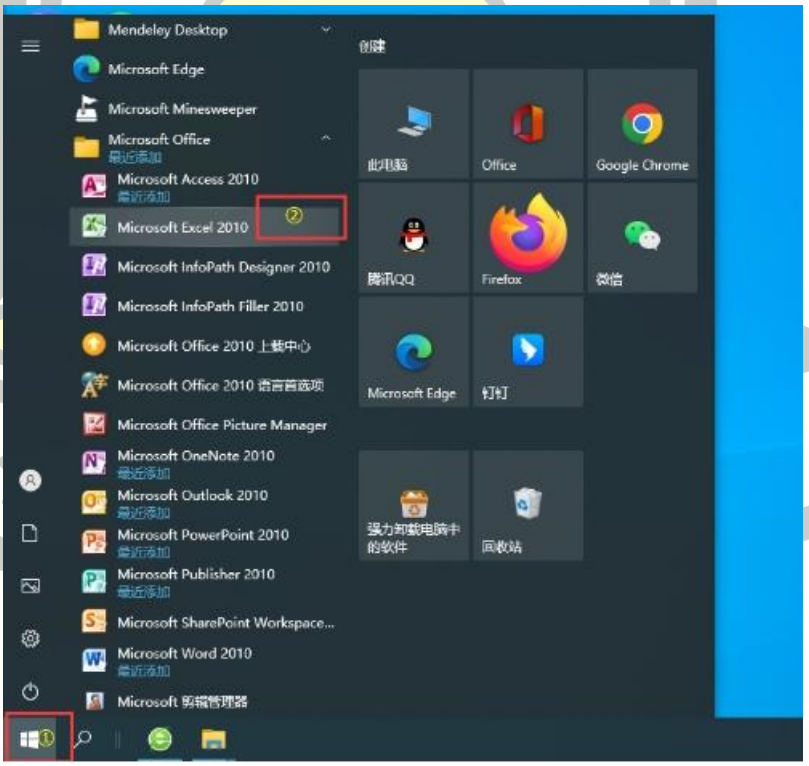
Method 1: (1) Right-click on the system desktop, select "New" -> click "xlsx worksheet" to create a workbook named "Student Information Registration Form.xlsx", as shown in the figure:



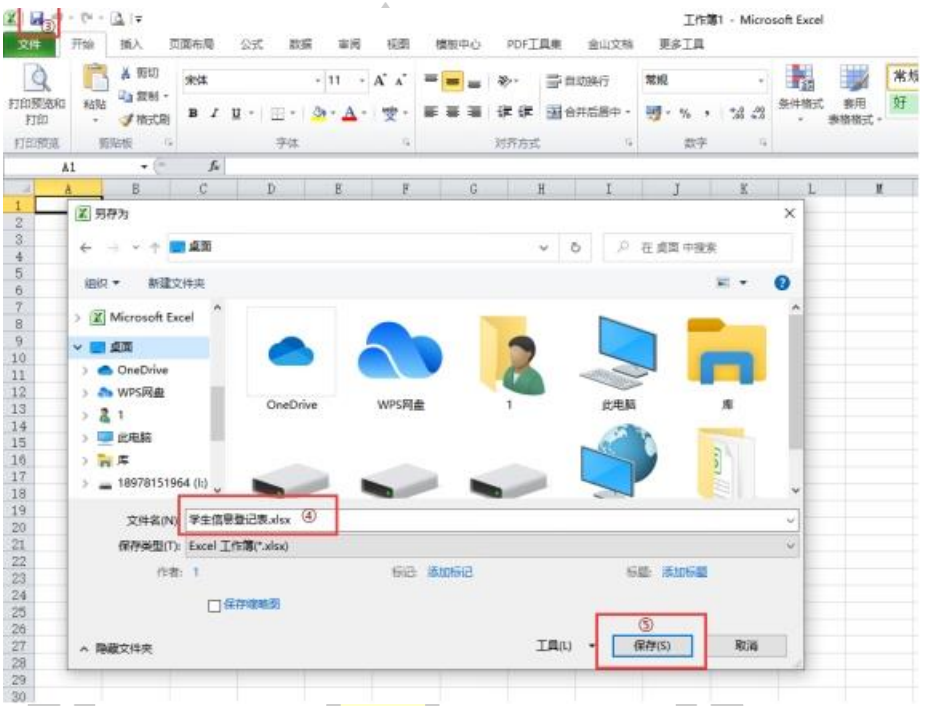
(2) Change the name of "New XLSX Worksheet.xlsx" on the desktop to "Student Information Registration Form.xlsx", as shown in the figure:



Method 2: (1) "Start" -> "Microsoft Office" -> "Microsoft Excel 2010", as shown in the figure:



(2)"Save" -> select the storage location: system desktop, as shown in the figure:



2. Open and close the workbook

(1) Open the "Student Information Registration Form.xlsx" workbook to understand the window composition of Excel 2010, as shown in the figure:

The teacher introduces the function of each function of the excel2010 window.

There are 3 worksheets in the Excel 2010 workbook by default, namely Sheet1, Sheet2, and Sheet3. Change the default number of worksheets: Select "Tools->Options->General" in the file drop-down menu, and change the value of the number of worksheets included to 1-255.

(2) Close the current workbook.

Click the "Close" button in the upper right corner of the workbook window, or click the "File" -> "Close" command to close the current workbook.

3. Edit worksheet

(1) Insert a new worksheet

Select sheet3 and click the New Sheet button next to "Worksheet Label" to create sheet4 and sheet5.

(2) Rename the worksheet

Rename the sheet1 worksheet to "Student Information Registration Form", click on the sheet2 worksheet, and rename the worksheet to "Student Achievement Statistics Table".

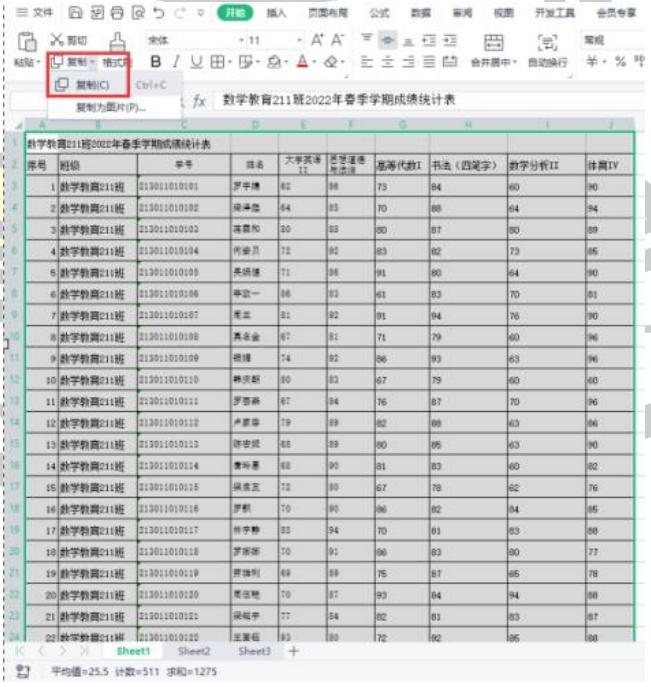
Method:

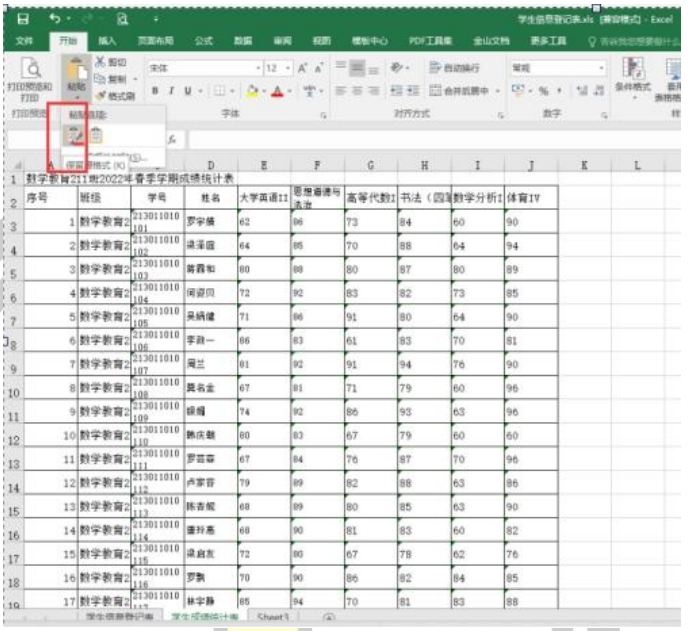
Select the sheet1 worksheet, click the right mouse button, select the "Rename" command in the shortcut menu that opens, and change the worksheet label name to "Student Information Registration Form". The renaming operation of the sheet2 worksheet is the same as that of the sheet1 worksheet . As shown in the picture:

(3) Copy worksheet content

Open the material "Student Grade Sheet.xlsx" workbook, copy and paste the content of the worksheet to the "Student Grade Statistics Table" in the "Student Information Registration Sheet.xlsx" workbook.

Open the material "student grade sheet. Paste in "Statistics Table", the paste operation can be done through the "Paste" command in the clipboard of the "Home" tab, or you can select the A1 cell, click the right mouse button, and select "Paste". as shown in the picture:





(4) Move and copy the worksheet

Create a copy of the "Student Information Registration Form" worksheet, move the copy to the front of the "Student Performance Statistics" worksheet, and change the color of the label of the copy worksheet to "green".

Method:

Move the cursor to the "worksheet label", select the "student information registration form" worksheet label, click the right mouse button, and select "move or copy" in the opened shortcut menu. In the pop-up dialog box, select the worksheet move position before the "Student Performance Statistics Table", and check the "Create a copy" check box, as shown in the figure:

(5) Delete worksheet sheet3

Move the cursor to the position of "Worksheet Label", select the "sheet3" worksheet label, click the right mouse button, and select "Delete".

4. Enter text and data in sheet 4

(1) Input text and data

Enter the title row information in the "Student Information Registration Form" worksheet in the first row of the table in sheet 4. Copy the contents of the "Name" and "Ethnicity" columns in the "Student Information Registration Form", paste them into the corresponding columns of sheet4, and then enter the class and other information in turn.

Methods as below:

Click cell A1 and enter the text "Student Information Registration Form". Click cell A2, enter the text "Number", click cells B2 to G2 in turn and enter the

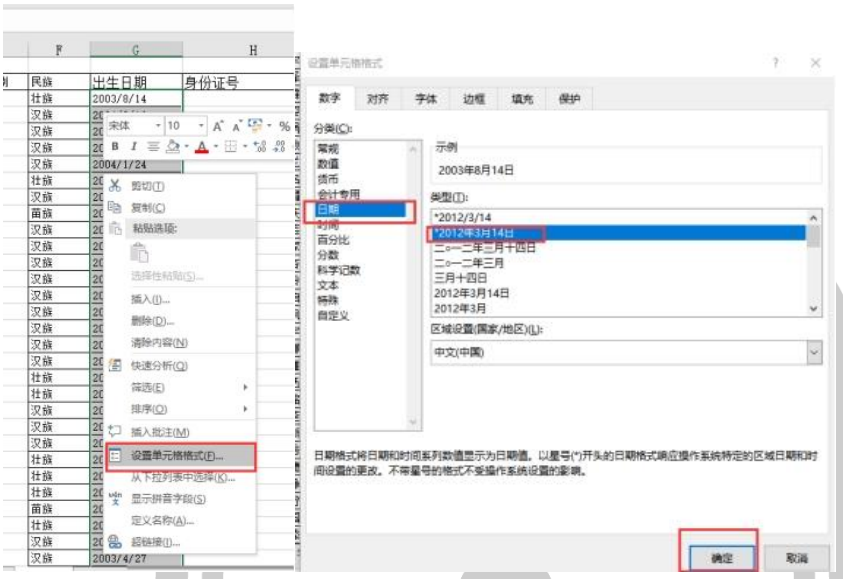
corresponding content. Enter "Mathematics Education Class 211" in cell B3 of the "Class" column and copy it, and click the right mouse button in cell B4 to paste. Move the cursor to the "Worksheet Label", select "Student Information Registration Form", copy the content of the "Name" column, switch back to the "sheet4" worksheet, and paste it in the corresponding column. To copy the contents of the "ethnicity" column, refer to the method of the "name" column.

(2) Enter date and time

In the "Date of Birth" column in the "sheet4" worksheet, enter the corresponding date of birth in the "Student Information Registration Form" worksheet, and then change all the dates to the standard date format of "Year Month Day". Method:

The date input method is the same as text input. After the input is completed, select the G3:G32 cell range, click the right mouse button, and select "Format Cell" in the shortcut menu that opens. In the Number tab of the pop-up "Format Cells" dialog box, click the "Date" category, select the time format of "Year Month Day" in the Type, and finally click the OK button.

As shown in the picture:



(3)Enter ID number

There are 2 ways to enter the ID card number. Way 1: Select the cell range H3:H32, click the right mouse button, and select "Format Cell" in the shortcut menu that opens. On the Number tab of the pop-up "Format Cells" dialog box, select the "Text" category, click the "OK" button, and then enter the ID number.

Method 2: Switch the input method to English, double-click cell H3, enter single quotation marks, and then enter the ID number.

(4)Quickly enter sequence data, automatically populating the "Number" column.

Enter the contents of the "Number" column by means of automatic filling sequence, the number is 001-030, and the value "00" is required to be displayed.

Method:

A. Format the cells of the numbered column as text type

B. Enter 001 in cell A3, select cell A3, move the mouse to the lower right corner of the cell, when the cursor shape becomes a small black cross, hold down the left

mouse button and drag the cell down to A32, Release the left mouse button to fill all number values in column A, as shown in the figt-test

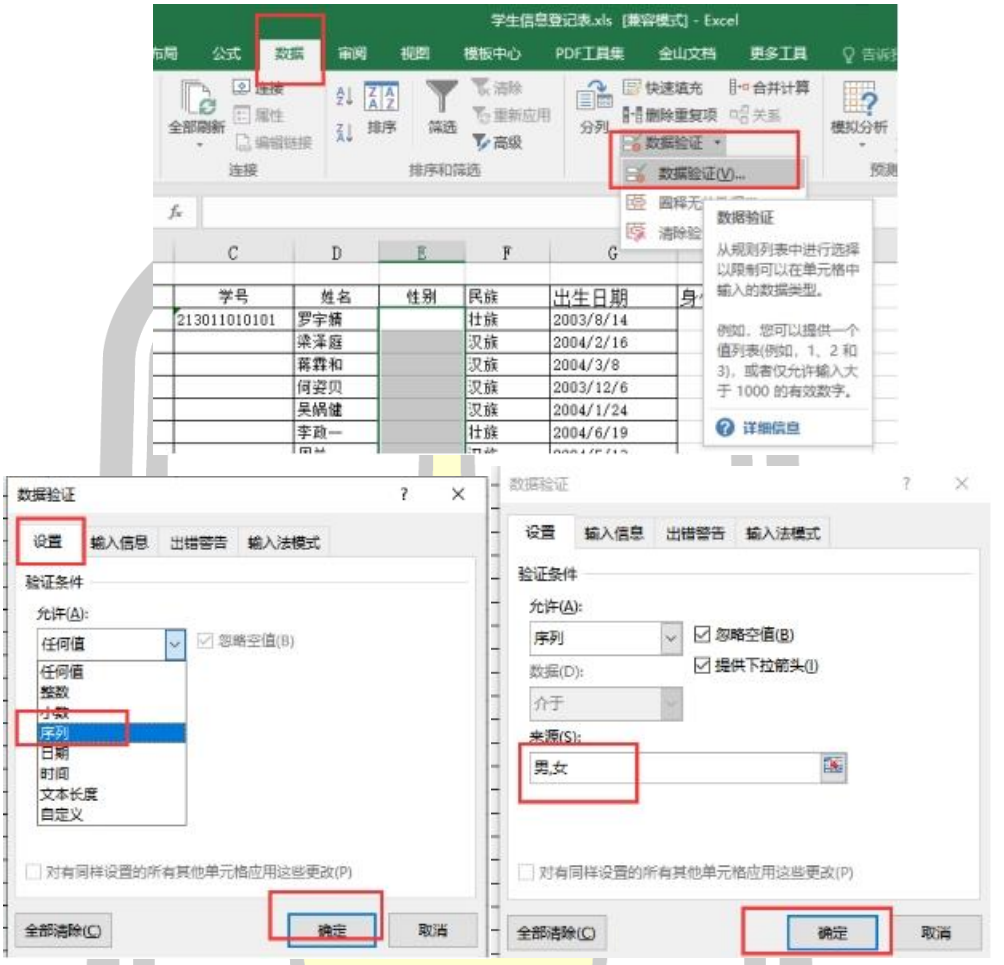
5. The application of data verification

Use the data validation function in the "Gender" column to complete the text input of "Male" and "Female".

Method:

Select the cell range E3:E32, click the "Data Validation" drop-down button in the "Data Tools" group in the "Data" tab, select the "Data Validation" command, open the "Data Validation" dialog box, switch to the "Settings "Tab.

Click the "Allow" drop-down list box, select the "Sequence" option, enter "male,female" in the "source" text box, and the comma in the middle is the comma in English, and confirm. As shown in the picture:



Homework 1:

1. Create a new workbook, name the workbook "Student Registration Form .xlsx" and save it to the computer D \:.

2. Open the "student performance registration form .xlsx" and name sheet1 "Student Registration Form".

3. Enter the following information in the worksheet "student performance registration form".

学生成绩登记表								
学号	姓名	性别	高数	英语	C语言	大学语文	总分	排名
002007101	赵永恒	男	88.0	82.0	89.0	65.0	324	7
002007102	王志刚	那	85.0	90.0	95.0	76.0	346	4
002007103	孙红	女	89.0	77.0	52.0	87.0	305	9
002007104	钟秀	女	90.0	89.0	96.0	86.0	361	2
002007105	林小林	女	73.0	87.0	88.0	79.0	327	6
002007106	黄河	男	81.0	89.0	90.0	91.0	351	3
002007107	宁中一	男	86.0	78.0	80.0	76.0	320	8
002007108	陶同明	男	57.0	86.0	77.0	68.0	288	11
002007109	曹文华	女	85.0	56.0	81.0	68.0	290	10
002007110	杨青	女	95.0	93.0	86.0	91.0	365	1
002007111	李立扬	男	55.0	45.0	50.0	75.0	225	12
002007112	孟晓霜	女	74.0	92.0	94.0	84.0	344	5

1) Use automatic filling function to enter the school number.

2) The results of each subject are displayed as numbers, and 1 digit after the decimal point is retained.

3) In the "Gender" column, the data verification function is used to complete the text input of "male" and "female".

4. Create a copy for the "Student Registration Form".

5. Delete Sheet2, Sheet3.

Evaluation standard for classwork 1:

No.	evaluation items		Scoring standard		
			2	1	0
1	Create a workbook		Create correctly and save the position correctly	Create correctly but the preservation position is wrong	Not working
2	Open, close the workbook		Open and close the workbook correctly	Will open the workbook but not close	Not working
3	Understand the window composition of the sheet	title	Correctly say the title in the window	Who can't distinguish the title in the position of the window but actively ask questions	Not working
4		Quick visit bar	Correctly say the purpose and location of the quick visit bar	Can't tell the position where the quick visit bar is in the window but actively ask questions	Not working
5		Function tab	Correctly talk about the purpose and location of the function tab	Unknown function tabs at the position of the window but actively ask questions	Not working
6		Name box	Correctly speaking the use and location of the name box	can't tell what the name box is, but ask questions actively	Not working
7		Editorial column	Correctly talk about the purpose and location of the editorial column	Can't tell where the editorial column is, but ask questions actively	Not working
8		Work area	Correctly talk about the purpose and location of the working area	can't tell where the work area is, but ask questions actively	Not working
9		Sheet tag	Correctly say where the sheet tag is, how many sheets are there in the default.	can't tell where the sheet tag is, but ask questions actively	Not working

10	Edit sheet	Insert a new sheet	Put in the new sheet correctly	Can be inserted into the sheet but the position is wrong	Not working
11		Rename sheet	Can be correctly renamed the sheet	Don't understand how to rename the sheet, but ask the question actively.	Not working
12		Move or copy the sheet	Can move and copy the sheet correctly	Will move the sheet and not copy the sheet or copy the sheet without moving the sheet but ask questions actively	Not working
13		Delete sheet	Can delete the sheet correctly	Don't know how to delete the sheet but ask questions actively	Not working
14		Change the sheet tag color	Can correctly change the sheet tag color	Don't understand how to change the sheet tag color, but ask questions actively	Not working
15		Protective sheet	Will set a protective sheet	don't know how to protect the worksheet, but ask questions actively	Not working
16	Enter data in the sheet	Enter text and data	Can enter text, data correctly	The input text and data format is wrong	Not working
17		Input ID number	Can enter the ID number correctly	The input ID number display format is wrong	Not working
18		Enter the year of birth	Can be correctly entered the date of birth	The format of the date of birth is wrong	Not working
19		Enter the sequence data	Can quickly fill the sequence	Do not understand the purpose of quickly filling the sequence	Not working
20		data verification	Can set data verification	Data verification settings error	Not working

Evaluation standard for homework 1:

evaluation items		Scoring standard		
		2	1	0
Create a workbook		Create correctly and save the position correctly	Create correctly but the preservation position is wrong	Not working
Rename sheet		Can be correctly renamed sheet	Don't understand the sheet naming but ask questions actively	Not working
Entering and editing sheet data	Enter text data	Enter the text data correctly	Text data input is wrong	Not working
	Automatic filling student number column	Correctly automatically fill in student number	Do not understand the automatic filling function	Not working
	Set the number to display a decimal point	Set the number format correctly	Digital format settings are wrong	Not working
	Data verification gender column	Set gender column correctly	Gender -column data verification settings are wrong	Not working
Replication sheet		copy the sheet to the specified location.	Sheet copy position is wrong	Not working
Delete sheet		Delete the sheet correctly	Don't understand how to delete the sheet	Not working

Student behavioral performance scoring standard

3 = very good, 2 = good, 1 = general, 0 = not good.

The results of each behavior evaluation are not less than 1 point, and the total score of all behaviors is not less than 3 points.

evaluation items	Scoring standard			
	3	2	1	0
have discipline	1. Class on time 2. The clothes are clean and tidy 3. Observe classroom discipline	1. Class on time 2. The clothes are clean and tidy 3. Do not follow classroom discipline	1. Class on time 2. The clothes are not clean and tidy 3. Do not follow classroom discipline	1. Do not class
Actively study	1. Listen carefully 2. There are doubts: propose and actively answer questions in time 3. Do not do things that have nothing to do with learning in the classroom	1. Listen carefully 2. There are doubts: answering questions but not asking questions 3. Do not do things that have nothing to do with learning in the classroom	1. Listen carefully 2.There are doubts: do n't ask questions without answering the question 3. Do things that have nothing to do with learning in class	1. Do not class
Actively complete the task	1. Work according to the task list proposed 2. Classwork is completed in advance 3. Complete the homework on time	1. Work according to the task list proposed 2. Classwork is completed on time 3. Complete the homework on time	1. Work according to the task list proposed 2. Classwork are not completed on time 3. Do not complete the homework on time	1. Do not class 2. Do not complete the homework on time

Traditional Learning Program

Lesson plan 1

Course Name: Computer Application Fundamentals	Course Code: 130110011107
Teaching Object: Mathematics Education Class 2	School Year: The first semester of the 2022-2023 school year
Chapter: Basic Operation of Electronic Forms	Class Hours: 3 Class Hours

Learning Outcomes:

1. Understand the user interface of excel
2. Be able to perform basic operations on the worksheet
3. Enter data in the worksheet and make modifications to the data.

Nature:

Microsoft Excel, a member of Microsoft Office, is a spreadsheet processing software based on Windows. Using excel can process a large amount of data information, carry out data analysis and statistics, and also has a powerful chart function. It is a very practical office data processing software.

Learning Objectives:

Knowledge (K):

1. Understand the user interface of excel.
2. Worksheet knowledge.
3. Data input and modification.

Skills (P):

1. Students know the user interface of excel.
2. Students can perform basic operations on worksheets (create, move, copy, delete, rename, protect worksheets).
3. Students can enter data on the worksheet and edit the data.

Features (A):

1. Students abide by discipline in the classroom.
2.Students are willing to take the initiative to learn and have high enthusiasm for tasks.

Teaching focus:

1. Create, move, copy, delete, rename, and protect the worksheet.
2. Enter data in the worksheet and modify the data.

Teaching difficulties:

1. Use the "auto-fill" function to input data with certain rules.

Learning Content:

1. Create a workbook
2. Open and close the workbook
3. Understand the window composition of excel
4. Edit worksheet
5. Enter data in the sheet (text and numeric data)

Learning activities

1. Course import

Review the content of the previous lesson, the long text editor of Microsoft Word.

Leading the content of this lesson according to the textbook.

2. Teaching steps

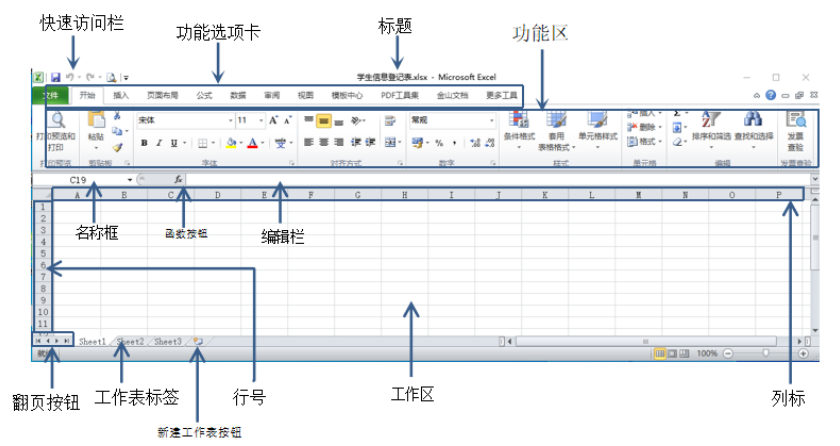
1) Put forward the learning content and learning goals of this lesson:

Students understand Excel user interface.

Students can carry out basic operations on the sheet (newly built, move, copy, delete, rename, and protect the sheet).

Students can enter data on the sheet and edit the data.

2) Explain the role of Excel's user interface, the role of each function.



3) Demonstrate the basic operation of the sheet to students

① Create a workbook

② Open and close the workbook

③ Edit sheet

④ Enter text data, ID number, year, month, and quickly fill in sequence data and data verification.

4) Teachers and students summarize knowledge together, students do classwork 1.

3. Evaluation phase

Evaluate students' classroom performance, do homework 1.

Media, learning resources and equipment:

1. A computer with Microsoft excel application software installed.
2. Textbooks.
3. Sample created from Microsoft excel program
4. Internet network.
5. Classwork 1.
6. Homework 1.

Measurement and Evaluation:

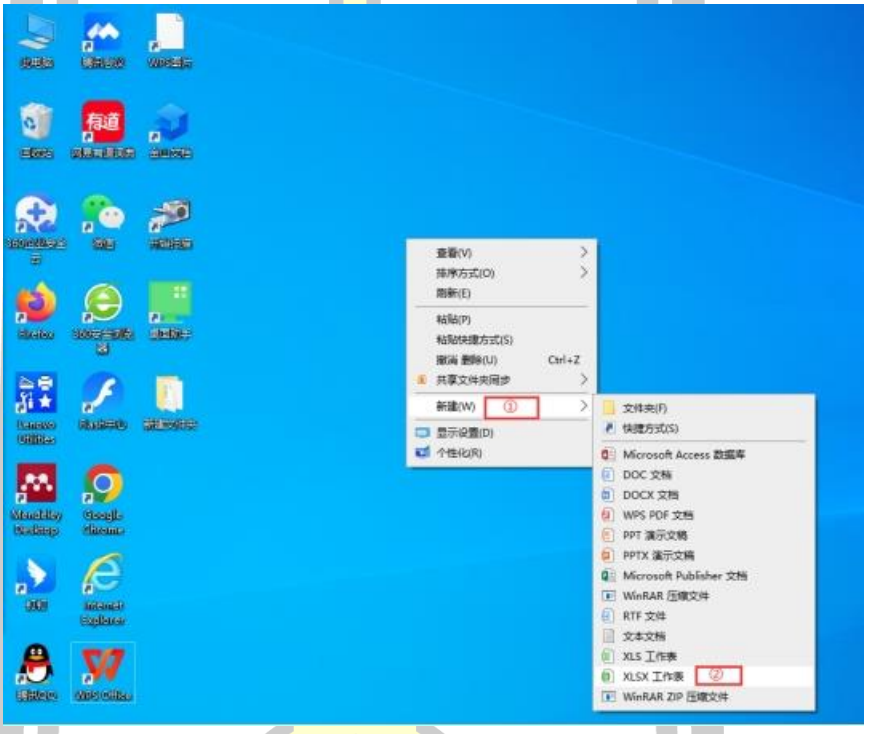
learning objectives	tool	Evaluation Standard
Knowledge (K): 1. Understand the user interface of excel 2010. 2. Worksheet knowledge. 3. Data input and modification.	Classwork 1	Student scored 70% or higher from classwork 1
Skills (P): 1. Students know the user interface of excel 2010. 2. Students can perform basic operations on worksheets (create, move, copy, delete, rename, protect worksheets). 3. Students can enter data on the worksheet and edit the data.	homework 1	Student scored 70% or higher from homework 1
Features (A): 1. Students abide by discipline in the classroom. 2. Students are willing to take the initiative to learn and have high enthusiasm for tasks.	Student Behavior Observation Form	Students earn a score of 70% or higher from the observation sheet

Classwork 1

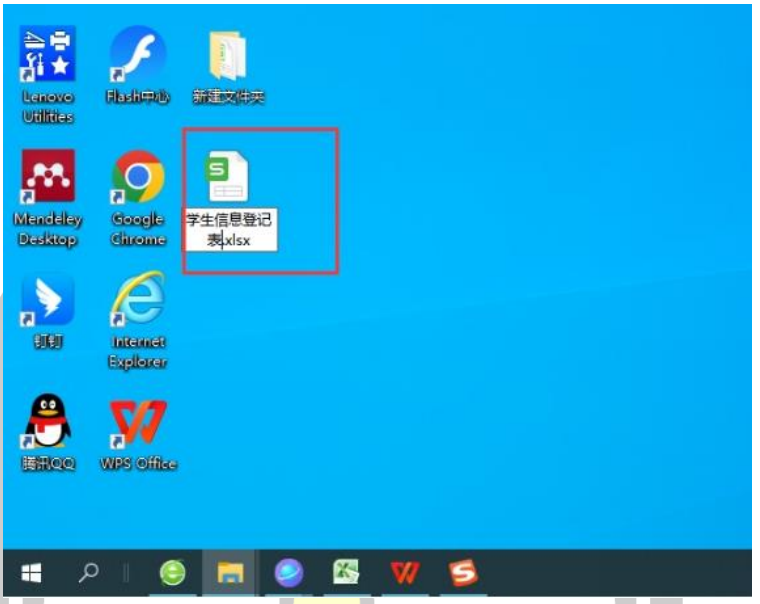
1. Create a workbook

Create a new workbook, name the workbook "Student Information Registration Form.xlsx", and save it to the desktop of the computer system.

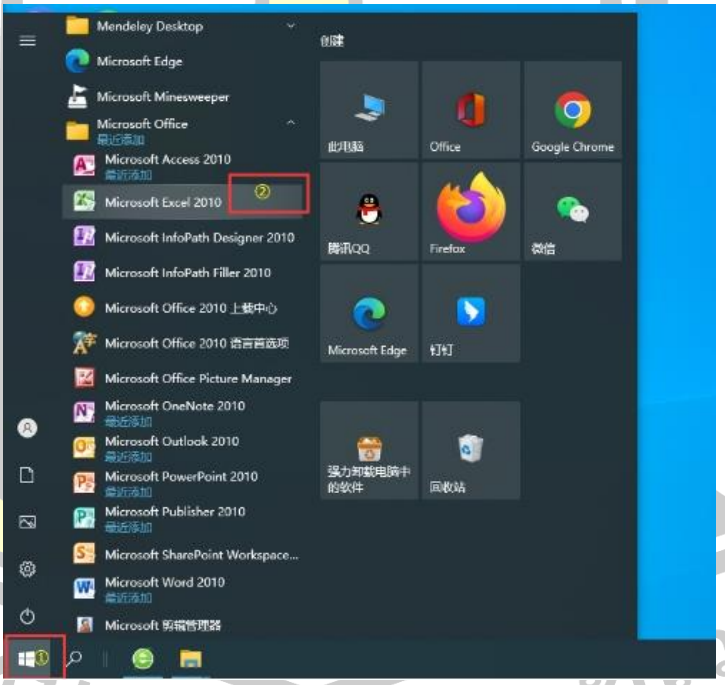
Method 1: (1) Right-click on the system desktop, select "New" -> click "xlsx worksheet" to create a workbook named "Student Information Registration Form.xlsx", as shown in the figure:



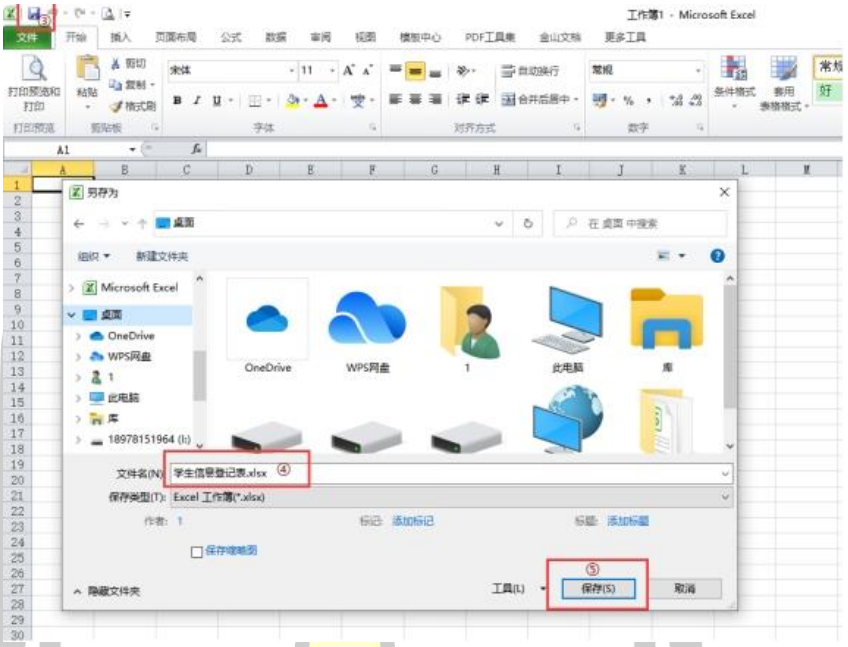
(2) Change the name of "New XLSX Worksheet.xlsx" on the desktop to "Student Information Registration Form.xlsx", as shown in the figure:



Method 2: (1) "Start" -> "Microsoft Office" -> "Microsoft Excel 2010", as shown in the figure:



(2)"Save" -> select the storage location: system desktop, as shown in the figure:



2. Open and close the workbook

(1) Open the "Student Information Registration Form.xlsx" workbook to understand the window composition of Excel 2010, as shown in the figure:

The teacher introduces the function of each function of the excel2010 window.

There are 3 worksheets in the Excel 2010 workbook by default, namely Sheet1, Sheet2, and Sheet3. Change the default number of worksheets: Select "Tools->Options->General" in the file drop-down menu, and change the value of the number of worksheets included to 1-255.

(2) Close the current workbook.

Click the "Close" button in the upper right corner of the workbook window, or click the "File" -> "Close" command to close the current workbook.

3. Edit worksheet

(1) Insert a new worksheet

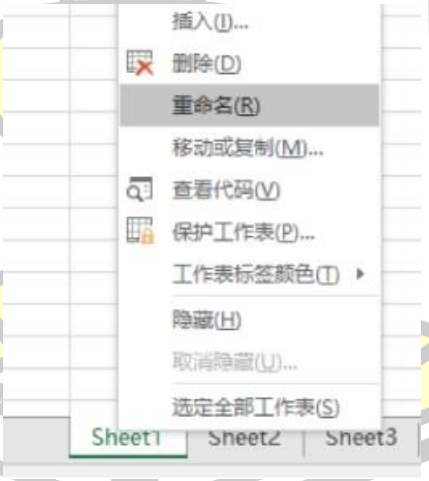
Select sheet3 and click the New Sheet button next to "Worksheet Label" to create sheet4 and sheet5.

(2) Rename the worksheet

Rename the sheet1 worksheet to "Student Information Registration Form", click on the sheet2 worksheet, and rename the worksheet to "Student Achievement Statistics Table".

Method:

Select the sheet1 worksheet, click the right mouse button, select the "Rename" command in the shortcut menu that opens, and change the worksheet label name to "Student Information Registration Form". The renaming operation of the sheet2 worksheet is the same as that of the sheet1 worksheet . As shown in the picture:

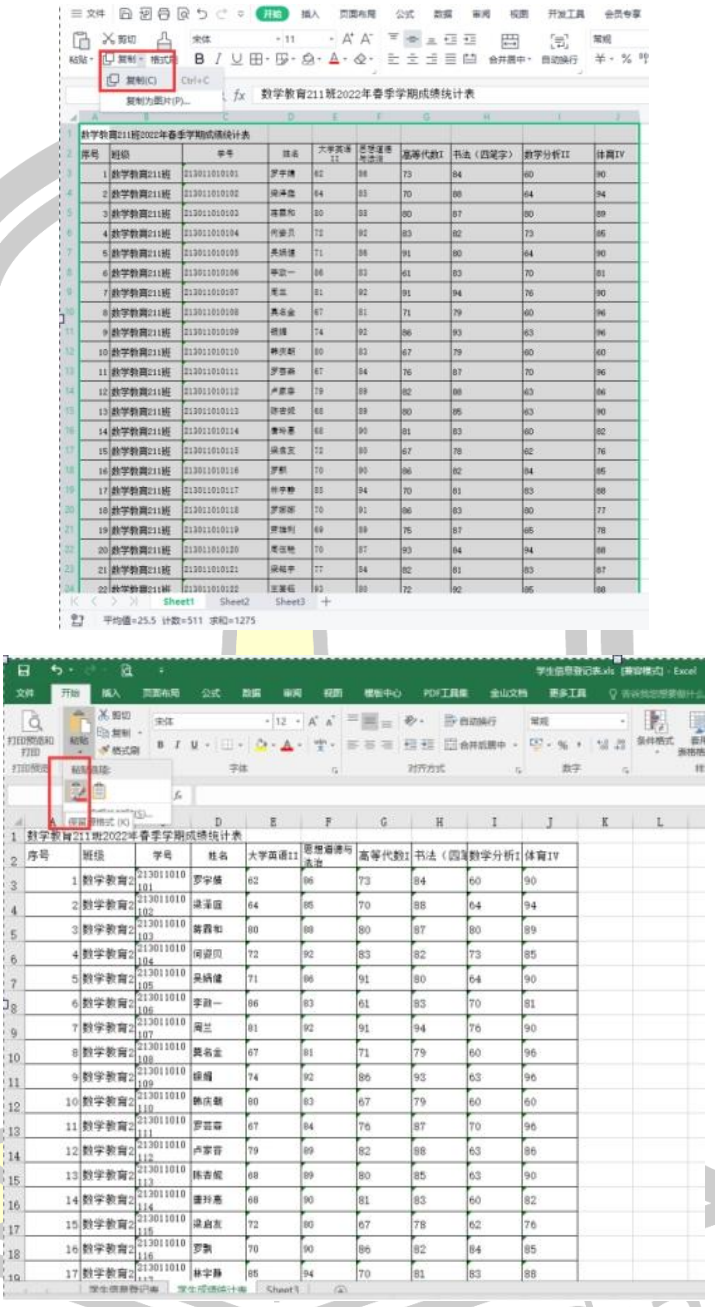


(3) Copy worksheet content

Open the material "Student Grade Sheet.xlsx" workbook, copy and paste the content of the worksheet to the "Student Grade Statistics Table" in the "Student Information Registration Sheet.xlsx" workbook.

Open the material "student grade sheet. Paste in "Statistics Table", the paste operation can be done through the "Paste" command in the clipboard of the "Home" tab, or you can select the A1 cell, click the right mouse button, and select "Paste". as

shown in the picture:



(4) Move and copy the worksheet

Create a copy of the "Student Information Registration Form" worksheet, move the copy to the front of the "Student Performance Statistics" worksheet, and change the color of the label of the copy worksheet to "green".

Method:

Move the cursor to the "worksheet label", select the "student information registration form" worksheet label, click the right mouse button, and select "move or

copy" in the opened shortcut menu. In the pop-up dialog box, select the worksheet move position before the "Student Performance Statistics Table", and check the "Create a copy" check box, as shown in the figure:

(5) Delete worksheet sheet3

Move the cursor to the position of "Worksheet Label", select the "sheet3" worksheet label, click the right mouse button, and select "Delete".

4. Enter text and data in sheet 4

(1) Input text and data

Enter the title row information in the "Student Information Registration Form" worksheet in the first row of the table in sheet 4. Copy the contents of the "Name" and "Ethnicity" columns in the "Student Information Registration Form", paste them into the corresponding columns of sheet4, and then enter the class and other information in turn.

Methods as below:

Click cell A1 and enter the text "Student Information Registration Form". Click cell A2, enter the text "Number", click cells B2 to G2 in turn and enter the corresponding content. Enter "Mathematics Education Class 211" in cell B3 of the "Class" column and copy it, and click the right mouse button in cell B4 to paste. Move the cursor to the "Worksheet Label", select "Student Information Registration Form", copy the content of the "Name" column, switch back to the "sheet4"

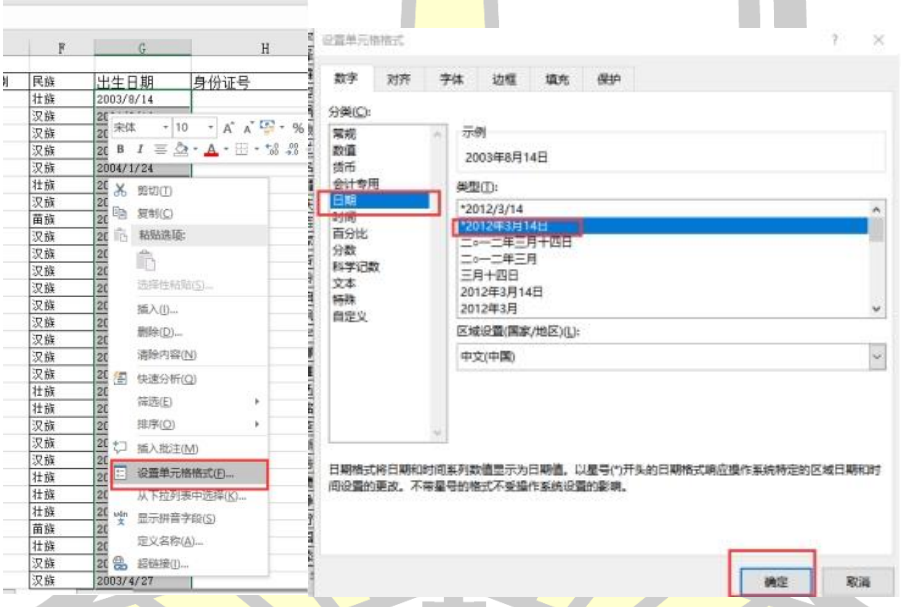
worksheet, and paste it in the corresponding column. To copy the contents of the "ethnicity" column, refer to the method of the "name" column.

(2) Enter date and time

In the "Date of Birth" column in the "sheet4" worksheet, enter the corresponding date of birth in the "Student Information Registration Form" worksheet, and then change all the dates to the standard date format of "Year Month Day". method:

The date input method is the same as text input. After the input is completed, select the G3:G32 cell range, click the right mouse button, and select "Format Cell" in the shortcut menu that opens. In the Number tab of the pop-up "Format Cells" dialog box, click the "Date" category, select the time format of "Year Month Day" in the Type, and finally click the OK button.

As shown in the picture:



(3)Enter ID number

There are 2 ways to enter the ID card number. Way 1: Select the cell range H3:H32, click the right mouse button, and select "Format Cell" in the shortcut menu that opens. On the Number tab of the pop-up "Format Cells" dialog box, select the "Text" category, click the "OK" button, and then enter the ID number.

Method 2: Switch the input method to English, double-click cell H3, enter single quotation marks, and then enter the ID number.

(4)Quickly enter sequence data, automatically populating the "Number" column.

Enter the contents of the "Number" column by means of automatic filling

sequence, the number is 001-030, and the value "00" is required to be displayed.

Method:

A. Format the cells of the numbered column as text type

B. Enter 001 in cell A3, select cell A3, move the mouse to the lower right corner of the cell, when the cursor shape becomes a small black cross, hold down the left mouse button and drag the cell down to A32, Release the left mouse button to fill all number values in column A, as shown in the figure:

	A	B	C
1	学生信息登记表		
2	编号	班级	学号
3	001	学教育211班	
4	002	数学教育211班	
5	003	数学教育211班	
6	004	数学教育211班	
7	005	数学教育211班	
8	006	数学教育211班	
9	007	数学教育211班	
10	008	数学教育211班	
11	009	数学教育211班	
12	010	数学教育211班	
13	011	数学教育211班	
14	012	数学教育211班	
15	013	数学教育211班	
16	014	数学教育211班	

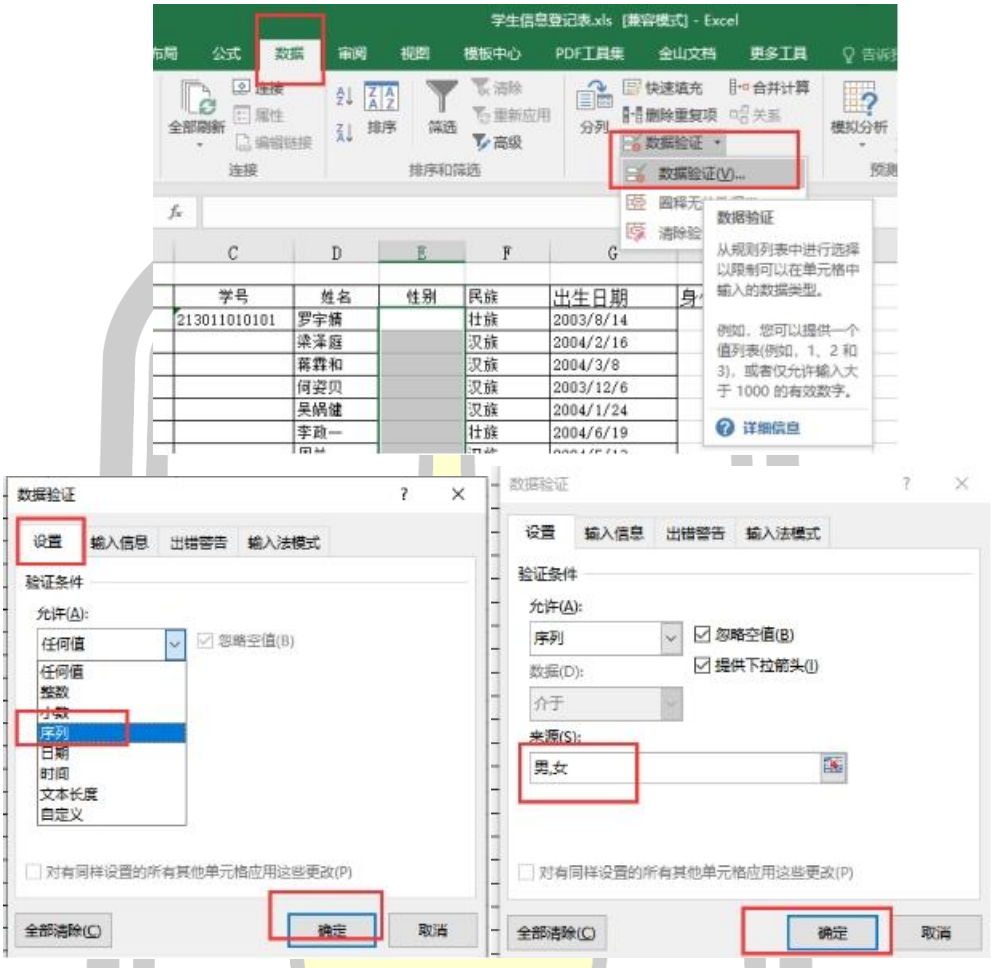
5. The application of data verification

Use the data validation function in the "Gender" column to complete the text input of "Male" and "Female".

Method:

Select the cell range E3:E32, click the "Data Validation" drop-down button in the "Data Tools" group in the "Data" tab, select the "Data Validation" command, open the "Data Validation" dialog box, switch to the "Settings "Tab.

Click the "Allow" drop-down list box, select the "Sequence" option, enter "male,female" in the "source" text box, and the comma in the middle is the comma in English, and confirm. As shown in the picture:



Homework 1:

1. Create a new workbook, name the workbook "Student Registration Form .xlsx" and save it to the computer D \:.

2. Open the "student performance registration form .xlsx" and name sheet1 "Student Registration Form".

3. Enter the following information in the worksheet "student performance registration form".

学生成绩登记表								
学号	姓名	性别	高数	英语	C语言	大学语文	总分	排名
002007101	赵永恒	男	88.0	82.0	89.0	65.0	324	7
002007102	王志刚	那	85.0	90.0	95.0	76.0	346	4
002007103	孙红	女	89.0	77.0	52.0	87.0	305	9
002007104	钟秀	女	90.0	89.0	96.0	86.0	361	2
002007105	林小林	女	73.0	87.0	88.0	79.0	327	6
002007106	黄河	男	81.0	89.0	90.0	91.0	351	3
002007107	宁中一	男	86.0	78.0	80.0	76.0	320	8
002007108	陶同明	男	57.0	86.0	77.0	68.0	288	11
002007109	曹文华	女	85.0	56.0	81.0	68.0	290	10
002007110	杨青	女	95.0	93.0	86.0	91.0	365	1
002007111	李立扬	男	55.0	45.0	50.0	75.0	225	12
002007112	孟晓霜	女	74.0	92.0	94.0	84.0	344	5

1) Use automatic filling function to enter the school number.

2) The results of each subject are displayed as numbers, and 1 digit after the decimal point is retained.

3) In the "Gender" column, the data verification function is used to complete the text input of "male" and "female".

4. Create a copy for the "Student Registration Form".

5. Delete Sheet2, Sheet3.

Evaluation standard for classwork 1

No.	evaluation items		Scoring standard		
			2	1	0
1	Create a workbook		Create correctly and save the position correctly	Create correctly but the preservation position is wrong	Not working
2	Open, close the workbook		Open and close the workbook correctly	Will open the workbook but not close	Not working
3	Understand the window	title	Correctly say the title in the window	Who can't distinguish the title in the position of the	Not working

	composition of the sheet			window but actively ask questions	
4		Quick visit bar	Correctly say the purpose and location of the quick visit bar	Can't tell the position where the quick visit bar is in the window but actively ask questions	Not working
5		Function tab	Correctly talk about the purpose and location of the function tab	Unknown function tabs at the position of the window but actively ask questions	Not working
6		Name box	Correctly speaking the use and location of the name box	can't tell what the name box is, but ask questions actively	Not working
7		Editorial column	Correctly talk about the purpose and location of the editorial column	Can't tell where the editorial column is, but ask questions actively	Not working
8		Work area	Correctly talk about the purpose and location of the working area	can't tell where the work area is, but ask questions actively	Not working
9		Sheet tag	Correctly say where the sheet tag is, how many sheets are there in the default.	can't tell where the sheet tag is, but ask questions actively	Not working
10	Edit sheet	Insert a new sheet	Put in the new sheet correctly	Can be inserted into the sheet but the position is wrong	Not working
11		Rename sheet	Can be correctly renamed the sheet	Don’t understand how to rename the sheet, but ask the question actively.	Not working
12		Move or copy the sheet	Can move and copy the sheet correctly	Will move the sheet and not copy the sheet or copy the sheet without moving the	Not working

				sheet but ask questions actively	
13		Delete sheet	Can delete the sheet correctly	Don’t know how to delete the sheet but ask questions actively	Not working
14		Change the sheet tag color	Can correctly change the sheet tag color	Don't understand how to change the sheet tag color, but ask questions actively	Not working
15		Protective sheet	Will set a protective sheet	don’t know how to protect the worksheet, but ask questions actively	Not working
16	Enter data in the sheet	Enter text and data	Can enter text, data correctly	The input text and data format is wrong	Not working
17		Input ID number	Can enter the ID number correctly	The input ID number display format is wrong	Not working
18		Enter the year of birth	Can be correctly entered the date of birth	The format of the date of birth is wrong	Not working
19		Enter the sequence data	Can quickly fill the sequence	Do not understand the purpose of quickly filling the sequence	Not working
20		data verification	Can set data verification	Data verification settings error	Not working

Evaluation standard for homework 1

evaluation items		Scoring standard		
		2	1	0
Create a workbook		Create correctly and save the position correctly	Create correctly but the preservation position is wrong	Not working
Rename sheet		Can be correctly renamed sheet	Don't understand the sheet naming but ask questions actively	Not working
Entering	Enter text data	Enter the text data	Text data input is wrong	Not working

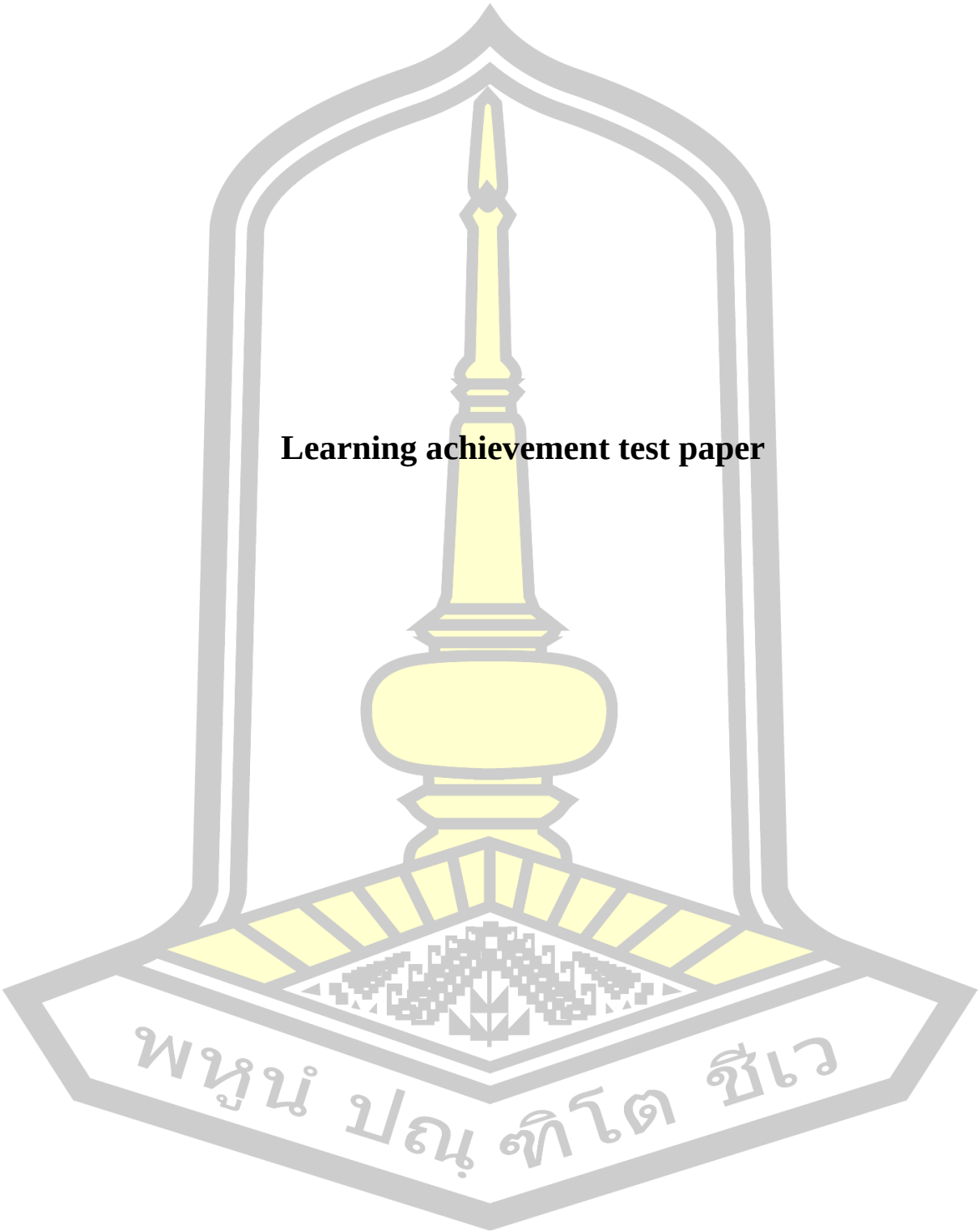
and editing sheet data		correctly		
	Automatic filling student number column	Correctly automatically fill in student number	Do not understand the automatic filling function	Not working
	Set the number to display a decimal point	Set the number format correctly	Digital format settings are wrong	Not working
	Data verification gender column	Set gender column correctly	Gender -column data verification settings are wrong	Not working
Replication sheet		copy the sheet to the specified location.	Sheet copy position is wrong	Not working
Delete sheet		Delete the sheet correctly	Don't understand how to delete the sheet	Not working

Student behavioral performance scoring standard

3 = very good, 2 = good, 1 = general, 0 = not good.

The results of each behavior evaluation are not less than 1 point, and the total score of all behaviors is not less than 3 points.

evaluation items	Scoring standard			
	3	2	1	0
have discipline	1. Class on time 2. The clothes are clean and tidy 3. Observe classroom discipline	1. Class on time 2. The clothes are clean and tidy 3. Do not follow classroom discipline	1. Class on time 2. The clothes are not clean and tidy 3. Do not follow classroom discipline	1. Do not class
Actively study	1. Listen carefully 2. There are doubts: propose and actively answer questions in time 3. Do not do things that have nothing to do with learning in the classroom	1. Listen carefully 2. There are doubts: answering questions but not asking questions 3. Do not do things that have nothing to do with learning in the classroom	1. Listen carefully 2.There are doubts: do n't ask questions without answering the question 3. Do things that have nothing to do with learning in class	1. Do not class
Actively complete the task	1. Work according to the task list proposed 2. Classwork is completed in advance 3. Complete the homework on time	1. Work according to the task list proposed 2. Classwork is completed on time 3. Complete the homework on time	1. Work according to the task list proposed 2. Classwork are not completed on time 3. Do not complete the homework on time	1. Do not class 2. Do not complete the homework on time



Learning achievement test paper

Excel Knowledge Test Paper

This test consists of three part, please complete within 60 minutes.

Part1: Single -choice questions (30 questions in total, 60 points)

1. The "Edit" column of the Excel worksheet includes ( ).

A. Name box B. Edit box C. Status Bar D. Name box and edit box

2. Excel can provide the operating environment on the computer ( ).

A. software B. form C. chart D. database

3. Excel workbook consists of a series of ( ).

A. cell B. word C. worksheet D. cell area

4. Excel's first default worksheet name is ( ).

A. Word1 B. Book1 C. Excel1 D. Sheet1

5. In the excel, the cell address refers to ( ).

A. The size of each cell B. Worksheet where cells are located

C. The location of the cell in the worksheet D. Every cell

6. Each cell has a fixed address, such as "A5" indicates ( ).

A. "A5" represents the data of the cell“A5”

B. "A5" is just two arbitrary characters“A5”

C. "A" represents "A", "5" represents the "5" column.

D. "A" represents the "A" column, "5" represents the "5" line.

7. One of the methods to enter a string 0771 in the cell is: enter ( ) before entering 0771.

A. A comma in English ",".

B. A single quoted number "'" in Chinese.

C. A single quoted number "'" in English.

D. A plus number "+".

8. When entering the dated within the unit, ( ) (excluding quotation marks) is generally used to divide the year, month, and day of the dated.

A. “/”or“-” B. “” or“1” C. “/”or“\” D. “\”or“-”

9. In the Excel, enter 1/2 in a cell should be entered ( ).

A. #1/2 B. 0.5 C. 0 1/2 D. 1/2

10. If cells A1 = 2, A2 = 4, select A1: A2 continuously, drag the filling handle to A10, then the data filled in each cell in the A1: A10 area is ( ).

A. 2, 4, 6… 20 B. All are 0 C. All are 2 D. All are 4

11. If the value of the field "grade" is 0-100, the error validity rules are ( )

A. >=0 AND<=100

B. [grade]>=0 AND [grade] <=100

C. grade>=0 AND grade<=100

D. 0< = [grade] <=100

12. In Excel, the method of copying the comments in a cell to another cell is ( ).

A. Copy the original cell to the target cell and execute the paste command.

B. Copy the original cell to the target cell and execute the selective paste command.

C. Use format brush.

D. Link the two cells.

13. After using the table format in Excel, the ( ) functional area tab will appear.

A. Picture tool B. Table tool C. Drawing tool D. Other tool

14. When the mouse pointer becomes ( ) style, press the left mouse button up and down mouse can change the height.

A. move B. Vertical adjustment C. Horizontal adjustment D. Hyperlink

15. When printing the workbook in Excel, the description ( ) below is wrong

A. You can print the entire workbook at once.

B. You can print one or more worksheets in a workbook at a time.

C. You can print only one page in a worksheet.

D. Can't just print a certain area in one worksheet.

16. Set the data bar in the "Condition Format" option of the cell, which can help view

the value of a cell relative to the values in other cells. The length of the data bar represents ( ).

A. The type of numerical value in the cell.

B. Number of numeric points in cells.

C. Format of the value in the cell.

D. The size of the value in the cell, the larger the data, the longer the data bar.

17. Set the automatic change of text in the unit grid. You can use the "wrap text" command in the ( ) tab of the "Format Cells" dialog box.

A. Number B. Alignment C. pattern D. Protect

18. To quote the data of a cell in the formula, you should enter ( ) in the formula.

A. Format B. Note C. data D. Name (address)

19. The content in the cell ( ).

A. Can only be numbers

B. Can only be text

C. Can't be a function

D. Can be text, numbers, and formulas

20. In Excel's cells, it is incorrect when entering the calculation formula ( ).

A. =SUM（B2, C3)

B. =SUM（B2:C3）

C. =B2+B3+C2+C3

D. =B2+B3+C2+C3+5

21. When the Excel formula is replicated, in order to use ( ) in the formula, the absolute address must be used.

A. The cell address changes with the new position

B. The range changes with the new position

C. The cell address does not change with the new position

D. The range changes with the new position

22. Add $ symbols in front of the line number and column number, which represents

absolute reference. The formula of the absolute reference table sheet2 from the A2 to the C5 area is ( ).

A. Sheet2! A2:C5

B. Sheet2! $A2:$C5

C. Sheet2! $A$2:$C$5

D. Sheet2! $A2:C5

23. In Excel, the function used to calculate the number of numbers containing numbers and the number of numbers in the parameter list is ( ).

A. COUNT B. AVERAGE C. MAX D. SUM

24. If the value of the cell D2 is 6, the result of function = if (d2> 8, d2/2, d2*2) is ( ).

A. 3 B. 6 C. 8 D. 12

25. In Excel, use the "start"-> "Edit"-> "Sort and Filter"-> "Custom Sorting" command in the functional area. When adding keyword operations in the "Sort" dialog box, ( ).

A. No need to specify any keywords.

B. At least 3 keywords.

C. "Main keywords" must be specified.

D. The main and secondary keywords must be specified.

26. The incorrect narrative about sorting in the "Data List" is ( )

A. You can sort the data list according to the column or line.

B. When there is only one sort keyword, you can use in the toolbar or .

C. When sorting the " " or " " button, it can only change the order of the sequence, but the data of other columns will not change.

D. You cannot use the " " or " " button sort to sort multiple keywords. When multiple keywords are sorted, you cannot use the "data"-> "Sort" command.

27. The correct narrative about filter and sort is ( ).

A. Sorting means to sort the data. The filtering means to display the data that meets

the conditions, and temporarily hide the data that does not be displayed.

B. Filtering means to sort the data. The sorting means to display the data that meets the conditions, and temporarily hide the data that does not be displayed.

C. Sorting is a fast way to find the data subset in the data list. The filtering means to display the data that meets the conditions.

D. Sorting will not re -arrange the data list; filtering must be re -arranged the data list.

28. Before subtotal, it is necessary to perform the ( ) operation of the classification field.

A. filter B. sort C. Sort after filtering D. Filter after sorting

29. There is a list of students' status data list on the current worksheet (including fields, names, majors, 3 courses and other fields). We must calculate the average score of each course according to the professional and gender. The most suitable method is to use ( ).

A. pivot table B. filter C. sort D. subtotal

30. The default field subtotal method in the data area of the Excel pivot table is ( )

A. sum B. average C. product D. max

Part 2: Excel Operation Questions 1 (20 points).

Please perform the following operations in the open window. After the operation is completed, please turn off Excel and save the workbook. Note: You cannot change the order of the worksheet at will, otherwise it may lead to loss of points!

Complete the following operations in sheet1:

1. Enter the text of the "Student Score Statistics" in B1. The font is the size of Songti 18, merged B1: H1, and the height is 25.

2. Add comments to the cell C12, which is "calculated by function".

3. Taking the "total score" as the keyword, sorting in the order of decline, the "average

score" is unchanged.

4. The inner and outer border lines are added in the B2: H11 area, the external frame line is a double real line, and the interior is a single real line.

5. Use the average () function to calculate the average score of each subject. It is required to calculate the average mathematics score first, and then complete the calculation of the remaining three subjects by dragging the mouse at one time. As a result, fill in the corresponding cells.

6. Use the conditional formatting function to formulate the curriculum <60 -point cells into red shades.

7. All cells containing texts or values are set as horizontal alignment, and vertical alignment.

8. Refer to the sample to make a chart, the chart type is a “clustered column -shaped chart”. The title of the chart is the score statistical table ′ , which is displayed above the chart and inserted into the worksheet as an object.

Part3: Excel Operation Questions 2 (20 points).

Please perform the following operations in the open window. After the operation is completed, please turn off Excel and save the workbook. Note: You cannot change the order of the worksheet at will, otherwise it may lead to loss of points!

---

1. Copy sheet1, place between sheet1 and sheet2, and named ′ Computer Animation Technology Scores. Copy all the contents in the sheet1 and paste the positions starting from A1 in the sheet2 and sheet3 respectively. Create a new worksheet SHEET4 after sheet3, copy all the contents in the sheet1, and paste the position of the starting position in the sheet4 from A1.

2. The data in Sheet2 is arranged in the order of decline in total scores, and sheet2 is renamed "total score ranking".

3. In Sheet3, a high -level filtering is performed, the filtering is recorded as

"information" and the total score is greater than or equal to 90. The filtering conditions are placed in A22:F23, and the filtering results are placed in A25.

4. In Sheet3, using advanced filter. The filtering is recorded as "information" or the total score is greater than or equal to 90. The filtering conditions are placed in A31:F33, and the filtering results are placed in A35.Rename SHEET3 "Advanced Filter".

5. Subtotal in Sheet4: Find the average score of the total scores of each department, first use the "Department" field to arrange in the order of rising, and then subtotal. The sheet4 is renamed “subtotal”.

6. In sheet1, select C1: C20 and E1: E20, insert the “clustered column -shaped chart”, display the data tag, and place it outside the data end. Do not display the diagram, place the object in H2: N16.

7. Create a pivot table for the data of the worksheet name "pivot table”. The label of the line is "distribution department", the column label is "book category", the data is "quantity (volume)" for layout, and placed in the H2: L7 cell area. Do not display the total information of this column. Sheet names remain unchanged.

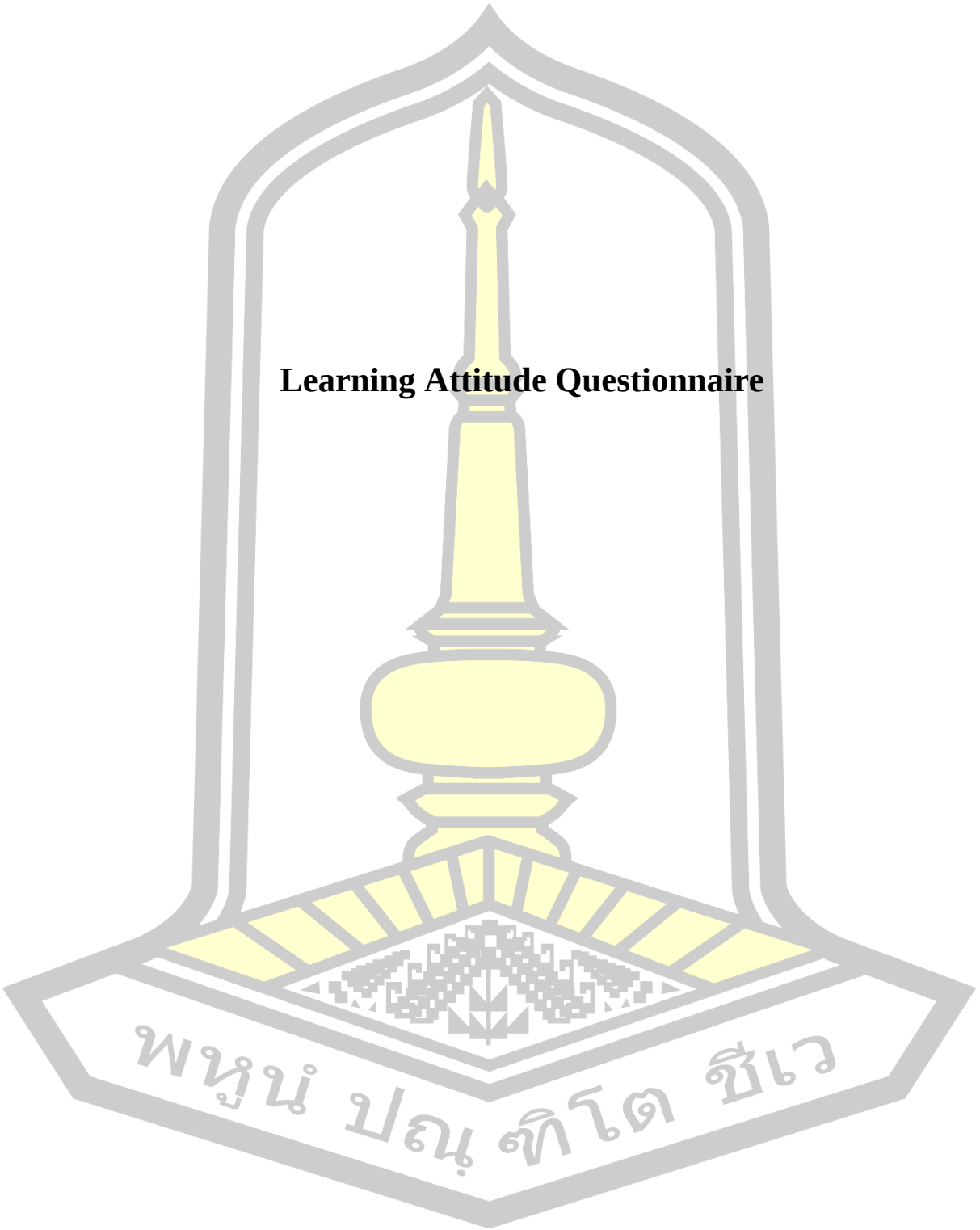
result：

Part1：

1.D 2.A 3.C 4.D 5.C 6.D 7.C 8.A 9.C 10.A

11.D 12.B 13.B 14.B 15.D 16.D 17.B 18.D 19.D 20.B

21.C 22.C 23.A 24.D 25.C 26.C 27.A 28.B 29.A 30.A



Learning Attitude Questionnaire

Learning Attitude Questionnaire

Computer Application Fundamentals Course learning attitude questionnaire

Hello classmate, thank you for filling in this questionnaire. The purpose of this questionnaire is to investigate the students' learning of the Computer Application Fundamentals Course. I hope I can increase my understanding of the teaching situation of this course with your real opinions. This survey is anonymous, so please answer every question truthfully according to your actual situation. Finally, thank you for your assistance and wish you !

Part 1

1. Class [fill in the blank] *_____
2. Gender [fill in the blank] *_____
3. Age [fill in the blank] * _____

Part 2

No.	Project	very agreed	agree	neutral	disagree	very disagree
1	Students find the "Computer Application Fundamentals Course" very interesting.					
2	"Computer Application Fundamentals Course" is important to students.					
3	Students want to learn the course "Computer Application Fundamentals" well.					
4	Students are satisfied with the study of the course "Computer Application Fundamentals".					
5	Students think that the knowledge of this course can be applied to future work and life.					
6	Students believe that the classroom discipline and learning atmosphere of the "Computer Application Fundamentals Course" is very good.					
7	Students are happy to be able to learn the "Computer Application Fundamentals Course" course in computer rooms.					

8	Students feel that the computer and the network of the classroom meet the requirements of learning.					
9	Students are willing to practice practical tasks arranged by the teacher in the classroom.					
10	Students are annoyed by the learning activities of the "Computer Application Fundamentals Course" course organized by the teacher.					
11	Students are willing to share the knowledge they learned in the classroom.					
12	Students solve problems with their classmates in the classroom.					
13	When students encounter difficulties, students will seek help from teachers.					
14	Students take the initiative to learn the knowledge of the "Computer Application Fundamentals Course" course.					
15	Students maintain the computer during the learning process.					
16	Students are at a loss when studying.					
17	Through learning, students understand more information about computers.					
18	Students believe that learning the "Computer Application Fundamentals Course" has a positive impact on the study of other subjects.					
19	Students can well apply the knowledge of this course to study in other subjects.					
20	Students feel happy in learning.					

Appendix B Quality of Research Tools

Table 22 evaluation results of suitability of task-based learning lesson plan 1

evaluation items	Standard	Expert's Opinion					average	result
		1	2	3	4	5		
1.Learning Outcomes	1.1 Accurate and clear.	4.80	4.70	4.60	4.50	4.80	4.68	the most suitable
	1.2 Follow the learning goals.	5.00	5.00	5.00	5.00	5.00	5.00	the most suitable
	1.3 Suitable for students.	4.60	4.70	4.50	4.60	4.70	4.62	the most suitable
2.Learning Objectives	2.1 Consistent with the course goal.	5.00	5.00	5.00	5.00	5.00	5.00	the most suitable
	2.2 Suitable for students.	4.40	4.50	4.60	4.50	4.60	4.52	the most suitable
	2.3 Cover 3 learning behaviors (KPA).	4.80	4.80	4.70	4.80	4.60	4.74	the most suitable
3.Learning Content	3.1 Mainly consistent with the goal of learning.	5.00	5.00	5.00	5.00	5.00	5.00	the most suitable
	3.2 The knowledge level suitable for students.	4.70	4.50	4.70	4.60	4.70	4.64	the most suitable
	3.3 Combined with the course.	4.60	4.80	4.80	4.70	4.80	4.74	the most suitable
	3.4 The content and time of the arrangement are reasonable.	4.60	4.30	4.50	4.40	4.60	4.48	very suitable
4.Task	4.1 Mainly consistent with the goal of learning.	5.00	5.00	5.00	5.00	5.00	5.00	the most suitable
	4.2 Mainly consistent with the content of learning.	4.80	4.70	4.60	4.70	4.60	4.68	the most suitable
	4.3 Highlighting practical skills.	4.70	4.80	4.60	4.70	4.70	4.70	the most suitable
	4.4 Encourage all students to participate.	4.50	4.40	4.60	4.70	4.50	4.54	the most suitable
5. Teaching activities	5.1 Mainly consistent with the goal of learning.	5.00	5.00	5.00	5.00	5.00	5.00	the most suitable

	5.2 Mainly consistent with the content of learning.	4.60	4.70	4.50	4.60	4.60	4.60	the most suitable
	5.3 The time for teaching activities is appropriate.	4.50	4.30	4.60	4.20	4.70	4.46	the most suitable
	5.4 In line with expected learning results.	4.60	4.70	4.60	4.60	4.70	4.64	the most suitable
6. Media, learning resources and equipment	6.1The media used is well applicable to teaching activities.	4.60	4.70	4.70	4.60	4.50	4.62	the most suitable
	6.2 Media is conducive to students' learning.	4.60	4.40	4.50	4.50	4.60	4.52	the most suitable
	6.3 students can use the media well.	4.30	4.50	4.40	4.20	4.50	4.38	very suitable
7.Measurement and Evaluation	7.1 Can be measured according to teaching activities.	4.50	4.60	4.50	4.70	4.60	4.58	the most suitable
	7.2 Evaluation is available.	4.70	4.60	4.50	4.60	4.60	4.60	the most suitable
	7.3 Follow the learning goals.	4.50	4.60	4.80	4.70	4.70	4.66	the most suitable
	all	4.68	4.68	4.68	4.66	4.71	4.68	the most suitable

Table 23 evaluation results of suitability of traditional learning lesson plan 1

evaluation items	Standard	Expert's Opinion					average	result
		1	2	3	4	5		
1.Learning Outcomes	1.1 Accurate and clear.	4.5	4.6	4.6	4.5	4.5	4.54	the most suitable
	1.2 Follow the learning goals.	4.8	4.8	4.7	5	4.7	4.8	the most suitable
	1.3 Suitable for students.	4.3	4.5	4.5	4.2	4.6	4.42	very suitable
2.Learning Objectives	2.1 Consistent with the course goal.	4.8	4.8	4.7	4.6	4.8	4.74	the most suitable
	2.2 Suitable for students.	4.3	4.5	4.4	4.5	4.5	4.44	very suitable
	2.3 Cover 3 learning behaviors (KPA).	4.7	4.6	4.7	4.5	4.6	4.62	the most suitable
3.Learning Content	3.1 Mainly consistent with the goal of learning.	4.8	4.7	5	5	4.6	4.82	the most suitable
	3.2 The knowledge level suitable for students.	4.6	4.5	4.5	4.6	4.5	4.54	the most suitable
	3.3 Combined with the course.	4.6	4.7	4.6	4.7	4.5	4.62	the most suitable
	3.4 The content and time of the arrangement are reasonable.	4.6	4.3	4.5	4.4	4.6	4.48	very suitable
4.learning activities	4.1 Mainly consistent with the goal of learning.	4.8	4.7	4.7	4.8	4.7	4.74	the most suitable
	4.2 Mainly consistent with	4.6	4.7	4.5	4.6	4.6	4.6	the most

	the content of learning.							suitable
	4.3 The time for teaching activities is appropriate.	4.5	4.3	4.6	4.2	4.7	4.46	very suitable
	4.4 In line with expected learning results.	4.6	4.5	4.6	4.6	4.5	4.56	the most suitable
5. Media, learning resources and equipment	5.1The media used is well applicable to teaching activities.	4.7	4.6	4.5	4.6	4.5	4.58	the most suitable
	5.2 Media is conducive to students' learning.	4.5	4.6	4.7	4.5	4.7	4.6	the most suitable
	5.3 students can use the media well.	4.5	4.5	4.4	4.3	4.4	4.42	very suitable
6.Measurement and Evaluation	6.1 Can be measured according to teaching activities.	4.4	4.5	4.6	4.4	4.5	4.48	very suitable
	6.2 Evaluation is available.	4.6	4.7	4.6	4.5	4.5	4.58	the most suitable
	6.3 Follow the learning goals.	4.5	4.6	4.6	4.6	4.5	4.56	the most suitable
all		4.585	4.585	4.6	4.555	4.575	4.58	the most suitable

Table 24 analysis of consistency (IOC) results of learning achievement test papers

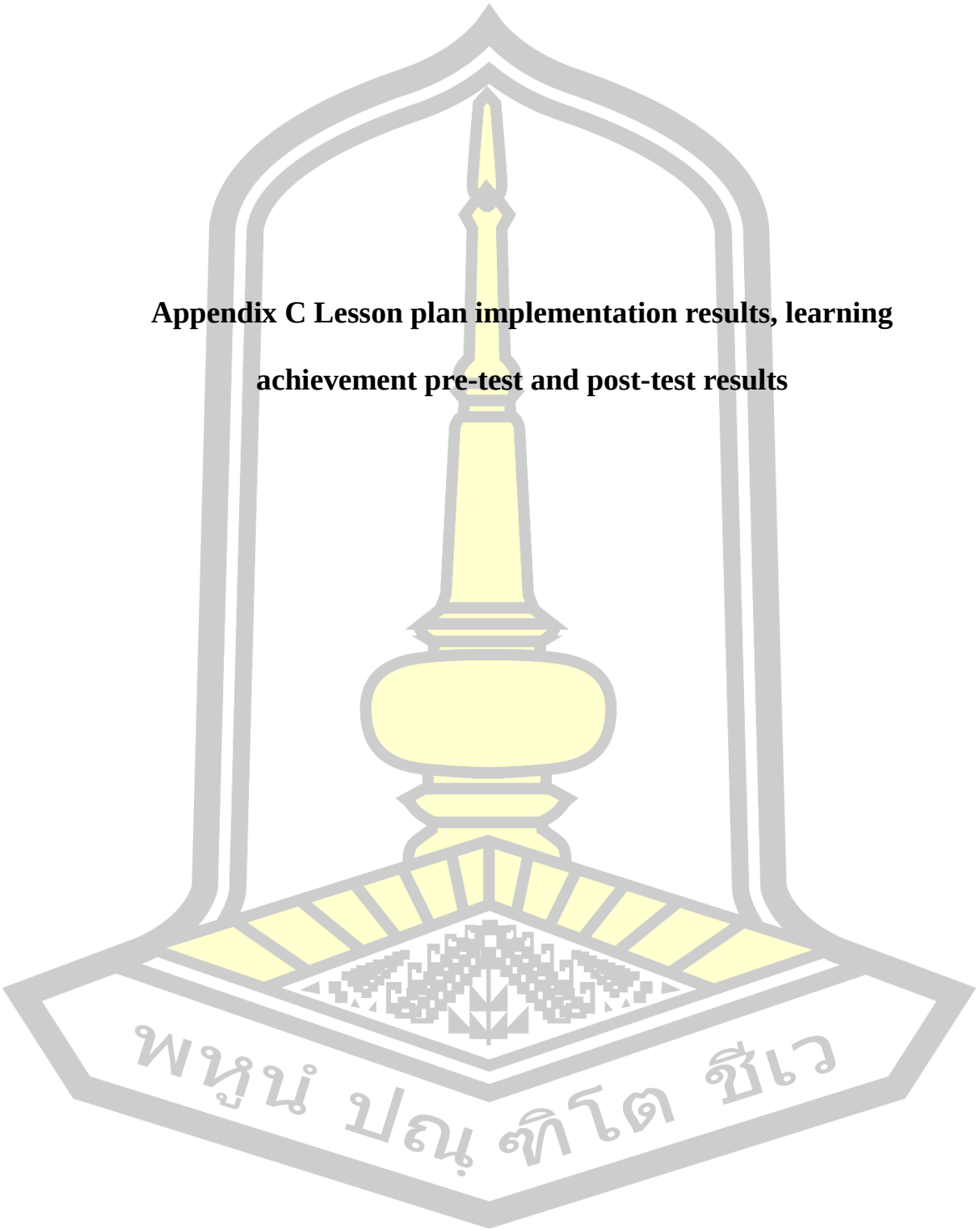
No.	Project		Expert's Opinion					total	average	result
			1	2	3	4	5			
1	Part1	1	1	1	1	1	0	4	0.8	good
2		2	1	1	1	1	1	5	1	Very good
3		3	1	1	1	1	1	5	1	Very good
4		4	1	1	0	1	1	4	0.8	good
5		5	1	1	1	1	1	5	1	Very good
6		6	1	1	1	1	1	5	1	Very good
7		7	1	1	1	1	1	5	1	Very good
8		8	1	1	1	1	1	5	1	Very good
9		9	1	1	1	1	1	5	1	Very good
10		10	1	1	1	1	1	5	1	Very good
11		11	1	1	1	0	1	4	0.8	good
12		12	1	1	1	1	1	5	1	Very good
13		13	1	1	1	1	1	5	1	Very good
14		14	1	1	1	1	1	5	1	Very good
15		15	1	1	1	1	1	5	1	Very good
16		16	1	1	1	1	1	5	1	Very good
17		17	1	1	1	1	1	5	1	Very good
18		18	1	1	1	1	1	5	1	Very good
19		19	1	1	1	1	1	5	1	Very good
20		20	1	1	1	1	1	5	1	Very good
21		21	1	1	1	0	1	4	0.8	good
22		22	1	1	1	1	1	5	1	Very good
23		23	1	1	1	1	1	5	1	Very good
24		24	1	1	1	1	1	5	1	Very good

25		25	1	1	1	1	1	5	1	Very good
26		26	1	1	1	1	1	5	1	Very good
27		27	1	1	1	1	1	5	1	Very good
28		28	1	1	1	1	1	5	1	Very good
29		29	1	1	1	1	0	4	0.8	good
30		30	1	1	1	1	1	5	1	Very good
31	Part 2		1	1	1	1	1	5	1	Very good
32	Part 3		1	1	1	1	1	5	1	Very good

Table 25 analysis of consistency (IOC) results of learning attitude

No.	Project	Expert's Opinion					total	average	result
		1	2	3	4	5			
1	Students find the "Computer Application Fundamentals Course" very interesting.	1	1	1	1	1	5	1	Very good
2	"Computer Application Fundamentals Course" is important to students.	1	1	1	1	1	5	1	Very good
3	Students want to learn the course "Computer Application Fundamentals" well.	1	1	1	1	1	5	1	Very good
4	Students are satisfied with the study of the course "Computer Application Fundamentals".	1	1	1	1	1	5	1	Very good
5	Students think that the knowledge of this course can be applied to future work and life.	1	1	1	1	0	4	0.8	Good
6	Students believe that the classroom discipline and learning atmosphere of the "Computer Application Fundamentals Course" is very good.	1	0	1	1	1	4	0.8	Good
7	Students are happy to be able to learn the "Computer Application Fundamentals Course" course in computer rooms.	1	1	0	1	1	4	0.8	Good
8	Students feel that the computer and the network of the classroom meet the requirements of learning.	1	1	1	1	0	4	0.8	Good
9	Students are willing to practice practical tasks arranged by the teacher in the classroom.	1	1	1	1	1	5	1	Very good

10	Students are annoyed by the learning activities of the "Computer Application Fundamentals Course" course organized by the teacher.	0	0	1	1	1	3	0.6	Good
11	Students are willing to share the knowledge they learned in the classroom.	1	1	1	0	1	4	0.8	Good
12	Students solve problems with their classmates in the classroom.	1	1	1	1	1	5	1	Very good
13	When students encounter difficulties, students will seek help from teachers.	1	1	1	1	1	5	1	Very good
14	Students take the initiative to learn the knowledge of the "Computer Application Fundamentals Course" course.	1	1	1	1	1	5	1	Very good
15	Students maintain the computer during the learning process.	1	1	1	0	1	4	0.8	Good
16	Students are at a loss when studying.	0	1	0	1	1	3	0.6	Good
17	Through learning, students understand more information about computers.	1	0	1	1	1	4	0.8	Good
18	Students believe that learning the "Computer Application Fundamentals Course" has a positive impact on the study of other subjects.	1	1	0	0	1	3	0.6	Good
19	Students can well apply the knowledge of this course to study in other subjects.	1	1	1	1	1	5	1	Very good
20	Students feel happy in learning.	1	1	1	1	1	5	1	Very good
								0.87	



Appendix C Lesson plan implementation results, learning achievement pre-test and post-test results

Table 26 task-based learning activity evaluation results

No.	Lesson plan 1			Lesson plan 2			Lesson plan 3			Lesson plan 4			Total	%
	Classwork	homework	Student behavior	Classwork	homework	Student behavior	Classwork	homework	Student behavior	Classwork	homework	Student behavior		
full score	40	16	9	18	12	9	18	6	9	10	8	9	164	100%
1	35	14	9	13	12	9	14	5	8	7	7	9	142	87%
2	35	13	9	13	12	9	14	6	9	7	7	9	143	87%
3	35	14	9	13	12	9	14	6	9	7	7	8	143	87%
4	35	16	9	13	12	9	14	6	9	7	7	9	146	89%
5	35	16	9	13	12	9	14	6	9	7	8	9	147	90%
6	35	16	9	13	12	9	14	6	9	7	8	9	147	90%
7	33	15	9	16	12	9	14	6	9	8	8	9	148	90%
8	33	13	9	16	12	9	14	6	9	8	8	9	146	89%
9	33	13	8	16	12	9	14	5	8	8	6	7	139	85%
10	33	15	9	16	12	9	14	6	9	8	8	9	148	90%
11	33	16	9	16	12	9	14	6	9	8	8	9	149	91%
12	33	14	9	16	12	9	14	6	9	8	6	9	145	88%
13	36	16	9	15	12	9	14	6	9	8	7	9	150	91%

14	36	15	9	15	12	9	14	6	9	8	8	9	150	91%
15	36	13	9	15	12	9	14	6	9	8	8	9	148	90%
16	36	15	9	15	12	9	14	6	9	8	6	9	148	90%
17	36	16	9	15	12	9	14	6	9	8	8	9	151	92%
18	36	16	8	15	12	9	14	5	9	8	6	7	145	88%
19	37	16	9	15	12	9	15	6	9	9	8	9	154	94%
20	37	14	9	15	12	9	15	6	9	9	8	9	152	93%
21	37	15	9	15	12	9	15	6	9	9	8	9	153	93%
22	37	15	9	15	12	9	15	6	9	9	8	9	153	93%
23	37	16	9	15	12	9	15	6	9	9	8	9	154	94%
24	37	14	9	15	12	9	15	5	9	9	8	9	151	92%
25	34	15	9	14	12	9	13	6	9	8	8	9	146	89%
26	34	14	9	14	12	9	13	6	8	8	8	8	143	87%
27	34	16	9	14	12	9	13	6	9	8	8	9	147	90%
28	34	15	8	14	12	9	13	5	8	8	6	8	140	85%
29	34	15	9	14	12	9	13	5	9	8	8	9	145	88%
30	34	16	9	14	12	9	13	6	9	8	8	9	147	90%
Sum	1050	447	267	438	360	270	420	174	266	240	225	263	4420	90%
$\bar{X}$	35.00	14.90	8.90	14.60	12.00	9.00	14.00	5.80	8.87	8.00	7.50	8.77	147.3	90%

S.D.	1.438	1.032	0.305	1.037	0	0	0.643	0.407	0.346	0.643	0.777	0.568		

Table 27 traditional learning activities evaluation results

No.	Lesson plan 1			Lesson plan 2			Lesson plan 3			Lesson plan 4			total	%
	Classwork	homework	Student behavior	Classwork	homework	Student behavior	Classwork	homework	Student behavior	Classwork	homework	Student behavior		
full score	40	16	9	18	12	9	18	6	9	10	8	9	164	100%
1	30	14	8	13	10	8	12	5	8	7	7	8	130	79%
2	29	14	8	13	11	8	13	5	8	7	7	8	131	80%
3	30	16	8	12	11	8	11	5	8	7	7	8	131	80%
4	30	14	9	13	12	9	12	6	9	7	7	9	137	84%
5	30	14	9	13	12	9	13	6	9	7	8	9	139	85%
6	33	14	9	14	12	9	13	6	9	7	8	9	143	87%
7	33	16	8	14	11	8	13	6	8	7	7	8	139	85%
8	31	15	9	15	11	9	12	6	9	7	7	9	140	85%
9	32	15	8	13	11	8	13	6	8	7	7	8	136	83%
10	33	16	8	14	12	9	13	6	9	7	6	9	142	87%
11	30	16	9	14	12	9	13	6	9	7	8	9	142	87%
12	30	15	9	12	11	9	14	6	9	7	8	9	139	85%
13	29	13	8	13	12	8	14	6	8	7	8	9	135	82%

14	29	13	9	11	12	9	13	6	9	7	8	9	135	82%
15	29	13	8	14	10	8	13	5	8	7	7	8	130	79%
16	30	13	9	15	12	9	14	6	9	7	8	9	141	86%
17	31	13	8	14	12	8	13	6	8	7	8	9	137	84%
18	29	13	9	15	12	9	13	6	9	7	8	9	139	85%
19	35	16	9	13	11	9	13	6	9	7	8	9	145	88%
20	34	15	8	13	10	8	14	5	8	7	8	9	139	85%
21	33	16	9	14	12	9	14	6	9	7	8	9	146	89%
22	34	16	8	13	11	8	13	5	9	7	8	9	141	86%
23	34	15	8	15	12	9	12	6	9	8	6	9	143	87%
24	33	16	9	15	12	9	14	6	9	7	6	9	145	88%
25	33	16	9	13	10	8	13	5	8	7	7	8	137	84%
26	32	14	8	14	10	8	13	5	9	7	7	8	135	82%
27	31	15	9	14	12	9	13	6	9	7	7	9	141	86%
28	30	13	8	14	12	8	14	6	8	7	8	9	137	84%
29	30	14	8	15	12	8	14	6	9	7	8	9	140	85%
30	30	14	8	15	12	9	13	6	9	7	8	9	140	85%
31	30	14	9	15	12	9	13	6	9	7	8	9	141	86%
32	29	13	8	12	11	8	13	5	8	7	7	8	129	79%
Sum	996	464	271	437	365	273	418	183	276	225	238	279	4425	84%
$\bar{X}$	31.125	14.50	8.47	13.66	11.41	8.53	13.06	5.72	8.63	7.03	7.44	8.72	138.28	84%

S.D.	1.827	1.164	0.507	1.066	0.716	0.507	0.716	0.457	0.492	0.177	0.669	0.457		

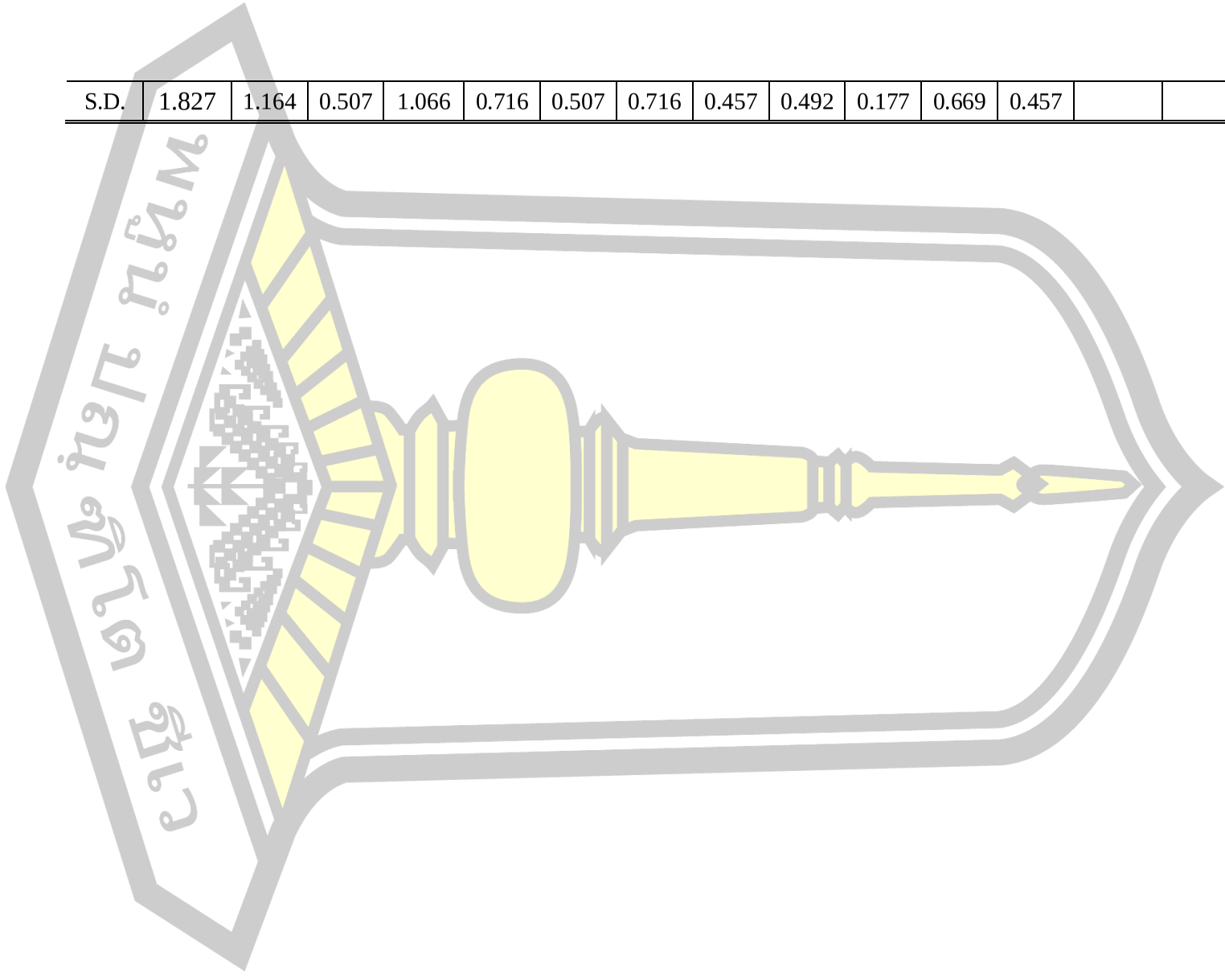


Table 28 the learning achievement of using task-based learning pretest and posttest results

No.	total score（full 100）		growth value	%
	pretest	posttest		
1	42	82	40	95.24%
2	47	86	39	82.98%
3	43	90	47	109.30%
4	49	84	35	71.43%
5	42	89	47	111.90%
6	41	86	45	109.76%
7	38	90	52	136.84%
8	42	80	38	90.48%
9	44	72	28	63.64%
10	48	90	42	87.50%
11	42	93	51	121.43%
12	46	81	35	76.09%
13	43	82	39	90.70%
14	46	83	37	80.43%
15	41	83	42	102.44%
16	42	81	39	92.86%
17	39	88	49	125.64%
18	41	72	31	75.61%
19	43	92	49	113.95%
20	40	82	42	105.00%
21	42	93	51	121.43%
22	38	90	52	136.84%
23	47	82	35	74.47%
24	48	93	45	93.75%
25	43	94	51	118.60%
26	43	89	46	106.0098%
27	43	90	47	109.30%
28	42	78	36	85.71%

29	38	83	45	118.42%
30	39	88	49	125.64%
Sum	1282	2566	1284	100.16%

Table 29 the learning achievement of using traditional learning pretest and posttest results

No.	total score（full 100）		growth value	%
	pretest	posttest		
1	38	65	27	71.05%
2	47	75	28	59.57%
3	46	83	37	80.43%
4	39	73	34	87.18%
5	46	81	35	76.09%
6	49	76	27	55.10%
7	43	72	29	67.44%
8	39	72	33	84.62%
9	38	77	39	102.63%
10	48	85	37	77.08%
11	40	79	39	97.50%
12	45	66	21	46.67%
13	37	69	32	86.49%
14	36	60	24	66.67%
15	45	79	34	75.56%
16	48	76	28	58.33%
17	46	80	34	73.91%
18	55	93	38	69.09%
19	41	88	47	114.63%
20	42	78	36	85.71%
21	43	74	31	72.09%
22	47	86	39	82.98%
23	43	76	33	76.74%

24	49	83	34	69.39%
25	44	76	32	72.73%
26	39	70	31	79.49%
27	40	66	26	65.00%
28	43	76	33	76.74%
29	48	83	35	72.92%
30	39	64	25	64.10%
31	48	71	23	47.92%
32	42	70	28	66.67%
Sum	1393	2422	1029	73.87%

BIOGRAPHY

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