

Adopting Aps Teaching Method Parallel Peer Scaffolding Process And Integrating Into Boppps Model For Online Teaching

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Abstract

The purpose of this study is to analyze the learning effect of the innovative teaching trilogy of APS teaching method parallel peer scaffolding process and then integrated into BOPPPS model for online teaching. The first part of the teaching strategy constructed in this study - APS teaching method, is mainly aimed at the course design in the teaching process of teachers, including asking, presenting and scaffolding. The second part is the peer-to-peer scaffolding process. Through the peer-to-peer eagle case process, students are trained to interpret, evaluate and communicate the information generated by managing case study and analysis, so that students can use case study in the classroom to improve learning motivation and enhance learning from peer scaffolding. The third part is the BOPPPS model, which will use the university's innovative classrooms, so that students can understand each other's situation face to face, and through the common practical cases in the class materials, find related practical applications of the same type, so that students are willing to actively participate and become BOPPPS. The most important teaching method is the initial introduction, which is expected to attract student's attention, to be interested in the unit content, and to be able to understand the teaching objectives of this unit, to arouse student's interest in management concepts through different interesting teaching materials learn. This program uses pre-tests to understand the basic knowledge of students, so as to accurately grasp the mentality of all students facing management courses, their cognition of management majors, their interest in case study and

analysis, and their past efforts. Through the positive encouragement in the peer scaffolding group and the guidance of warm-up questions before class, this research can effectively grasp the learning status of students from different backgrounds, so that all students can fully immerse themselves in a positive and effective learning atmosphere. It can reverse the learning pressure of online teaching for students in the technical and vocational system, and enable students to effectively apply the professional knowledge acquired in this research institute in the face of future business operations and corporate governance.

Keywords: APS teaching method, peer scaffolding process, BOPPPS model, innovative teaching

Introduction

In recent years, Taiwan's education system has replaced traditional teaching methods with diversified courses and practices. In order to strengthen students' interest in learning, inspire thinking and innovation, and enable students to have the ability to enter higher education and further studies, under such changes, universities of science and technology have begun to change. The traditional oral teaching method can no longer meet the habits and needs of students. It is imperative to change the teaching methods of university teachers. Some students take part-time jobs as their main task, so they are absent from class. Most of the students present are addicted to mobile games with their mobile phones on the desk in the classroom. The roll call has to be present in the classroom, and the so-called roll call learning is carried out in the classroom. The eyes of the students look tired and empty. In many courses, the teacher can only "teach the body of the student, but not the soul". The enthusiasm for teaching and learning gradually fades until it is extinguished.

This study found that students with different faculties and professional backgrounds showed significant differences. Students from the School of Management are good at communication and expression, and their explanations and contributions to problems make it easier for people to accept their ideas; students from the School of Design are rich in creativity and imagination, making them unique; students from the School of Information and Science and Technology are good at analyzing problems And have enough professional knowledge to solve problems; the process of solving problems in polytechnic institutes is often through tools and formulas. In the team of the same professional field, there is no need to discuss standard answers, and they can divide the work and start to complete. Many professional courses are all cultivated for this purpose. In the process of cultivation, it is often overlooked that the essence of practical problems is that there is often no standard answer, and the solution to the problem requires good expression and elaboration with professionalism to obtain more assistance.

Based on the above reasons, this research finds the following problems based on teaching and counseling experience:

- A. There are differences in the level of students and the traditional one-sided teaching is no longer the learning mode that students are used to.
- B. Freshmen's interpersonal relationship shows low initiative and communication skills. Software problems such as the Internet and mobile phones weaken students' real social skills, and half of the students lack the ability to take the initiative to care for their classmates.
- C. Students lack motivation and are afraid of challenges. Faced with problems that cannot be handled in class, most of them choose to avoid, or have low engagement, low class participation, or external environmental influences lead to a lack of enthusiasm for learning.
- D. Students lack the ability to express and discuss, how to communicate with others and persuade others.
- E. Existing teaching materials cannot support mutual discussion and interactive learning among students.

Research purposes

The purpose of this study is to analyze the learning effect of the innovative teaching trilogy of APS teaching method parallel peer scaffolding process and then integrated into BOPPPS model applied to online teaching. The first part of the innovative teaching trilogy is the APS teaching method, the second part is the peer scaffolding process, and the third part is the BOPPPS model. The respective descriptions are as follows.

Faced with the wave of big data, almost all industries need to extract information from the vast sea of data to formulate strategies or action plans. Especially in business education, in addition to the construction of qualitative knowledge, how to establish students' basic literacy in data interpretation and judgment is indispensable and increasingly important. However, in the face of the market's business management talents' prerequisite literacy-data analysis-requirements, most of the students faced by university business management education are afraid of mathematics and science. According to the host of this project, for students from higher vocational schools, mathematics and science are what they are least good at and afraid of, so that a small number of students, after being baptized in the department's management mathematics and compulsory courses in their freshman year, raised the question because of their fear of mathematics. Transfer department. Facing such a teaching scene and the characteristics of students, it is a difficult challenge for teachers to design and guide students to overcome fear and learn.

Due to the large number of students in the schools taught by the project host, a considerable proportion of students apply for student loans and

even underprivileged bursaries, so that students often can only “learn in the moment and just between classrooms”. It is almost impossible to study independently after class or before class. Therefore, how to enable students to learn efficiently in the classroom is extremely important. Therefore, how to enable students to learn efficiently in the classroom is extremely important. The teaching strategy-APS teaching method constructed in this research is mainly aimed at the curriculum design in the teaching process of teachers. The APS teaching method mainly includes the following three elements:

1. Asking: It is mainly for teachers to ask questions in a systematic and structured manner according to the theme of the teaching unit, so as to guide students to build up the learning of course content knowledge.
2. Presentation: It refers to the ability of students to transform the content of the assignment into knowledge or even perform deduction after learning the course. Each group must search for questionnaires on topics of interest from the Internet or design questionnaires by itself, and after collecting data, apply the concepts learned this semester to the questionnaire analysis.
3. Scaffolding: Let students learn together, encourage each other, complement each other's strengths and weaknesses, so that “learning” can really happen.

In addition to imparting knowledge, university education is more important to the development of learning attitudes or learning methods, so that students can establish the habit and ability of lifelong learning. Taking management as an example, in addition to imparting market data analysis skills and knowledge, it is more important to gradually shape students' positive learning attitudes towards management. However, many past research literatures have found that it is difficult for most students to have a positive learning attitude towards management; especially students with non-management-related backgrounds.

In university education, management, especially for students with a relatively low-level social science background in business management, has always been considered by students to be difficult and boring to learn, so that their learning motivation is even lower. In the process of teaching management, university teachers often feel frustrated and depressed when students' learning input is low and the results are not obvious. Therefore, the combination of management theory and practice has always been a difficult challenge for both teachers and students. However, in the era of big data and information explosion, data is continuously generated, stored and analyzed in various industries in an exponential growth manner; through data analysis, it can not only provide useful insights for decision makers, but also use market research data as a realistic social awareness, to achieve insight into management decision-making training [17]. Therefore, for college students, it is a very important

part of university education whether they can cultivate the insight ability training of management decision-making in universities.

In order to train students to interpret, evaluate, and communicate the information generated by the management case study and analysis through the peer eagle case process, the program host has been using the APS teaching method in parallel with the peer scaffold process in the classroom. The groupings are based on the management According to the number of students studying the course, they will be grouped to facilitate the subsequent oral report at the end of the group. In addition to the problem of peer composition, in order to improve the interactive learning of peer scaffolding in the classroom and reduce the common people's understanding of management, it is hoped that through the case study of management courses, students can use case study in the classroom to achieve improvement, and then enhance learning motivation and reinforce peer scaffolding learning.

Through the evaluation and investigation at the beginning of the period, this project understands the students' understanding of management, and conducts group learning, which is different from teaching in traditional classrooms. It will use the school's innovative classrooms, so that students can understand each other's situation face to face, and Through realistic and interesting topics and common practical cases in class materials, find related practical applications of the same type, so that students are willing to take the initiative to participate. As the most important initial introduction of BOPPPS teaching method, it is expected to attract students' attention. Interested in the content of the unit, and able to understand the teaching objective of this unit, and stimulate students' understanding of management concepts through different interesting teaching materials.

In addition, through the unit model of BOPPPS, this course effectively divides each semester course into three major units, unit-based teaching, pre-test and post-test before and after the unit teaching, so that teachers can effectively master students. The effect of unit learning can effectively understand the understanding level of students. Through the post-test, the teaching materials and teaching methods can be corrected, which can be applied immediately in the next unit, without waiting for the next semester to make corrections.

Literature Review

APS Teaching Method

Management is often listed as one of the knowledge or skills that must be learned in various fields of higher education, but relatively, most of the students' evaluations of management are more negative [11]. As far as the school of management taught by the host of this project is concerned, most students generally lack motivation, confidence, and feel anxious or sad when facing case studies related to management [20]. However,

when management teachers face students with widely different expressive abilities, how to teach at the correct speed and design the most difficult courses is a test of the teachers' teaching quality [22]. Therefore, this study intends to design the corresponding teaching methods and teaching materials under the teaching model structure of APS, and then use the grounded theory of qualitative research methods to explore students' learning experience and suggestions for the three APS teaching strategies, and then supplemented by questionnaires. The survey verifies the degree to which APS's various teaching designs and teaching materials are helpful to students' learning management.

Therefore, the following is intended to review the relevant literature on grounded theory used in the project.

● Grounded Theory

Grounded theory is a qualitative research tool widely used in business administration, humanities and sociology. Its founders, Glaser & Strauss, put forward the grounded theory in "Awareness of Dying" written in 1955, and formally used "Grounded theory" as the title of the special book in 1967, and established the framework and steps of the grounded theory research method. Different from general research methods that aim to verify or test existing theories, grounded theory aims to condense the key words in the sentences into facets or elements based on the context of the sentences and the pre-causal relationship from the collected qualitative data. Finally, construct the structural relationship between keywords. The grounded theory is mainly applied to research topics that have not yet had a theoretical framework, or the theoretical framework has not yet been applied to a specific object [18]. Then using grounded theory to summarize how APS improves management learning attitude and effectiveness should be a very appropriate research method. Based on the above literature review, this project intends to use grounded theory to explore how the APS teaching method can help students build a high-quality management learning attitude when marketing students are learning management.

Peer Scaffolding Process

The host of this program uses actual 5 service innovation practice cases, plus 5 planning practice cases, plus 5 business management practice cases, a total of 15 actual cases, covering diversified industrial trend changes and responses. The solution is to allow students to learn the multivariate changes and trend analysis of the industry from the discussion of actual case study, and use it as the subject of management teaching; through actual case study, students who are exposed to management for the first time can learn more motivated to learn. Researchers divided scaffolds into two types according to their characteristics [15]. The first type is dynamic (the first is called soft scaffolding, soft scaffolding), this type of scaffolding mainly focuses on prompt guidance or interactive discussion from teachers or student peers

(also known as teacher scaffolding or peer scaffolding). In educational games, students can achieve peer scaffolding benefits through peer interaction and collaboration within the scope of the game mechanism. The second type of scaffolding is static (also known as hard scaffolding, hard scaffolding); for example, teaching materials, technology or digital media used by teachers are used as immediate guidance and feedback. These two types of scaffolds have different auxiliary advantages for learning; however, through the cross-assistance of these two types of scaffolds, the learning effect of learners can be optimized [13].

Even though most of the studies hold a positive view that peer interaction can promote learners to carry out more meaningful learning in case study, but there are some scholars who disagree on whether there is a positive relationship between “peer interaction” and “case study” Certainty or skepticism [4]. It can be seen that the connection between the two needs to be further explored; this is also one of the key issues worthy of discussion in this project. The so-called “heart flow” represents a positive and optimal mental state [7]. The optimal flow state is related to the practitioner's enhanced learning experience satisfaction and self-reflection. Because the flow state represents the degree of learner participation [10]. Therefore, flow can be used as an important indicator of whether students are deeply involved in case study learning [19]. For the flow scale for games (FSG), please refer to [13][24]. Based on the above literature and the discussion, it can be concluded that the teaching design through case studies can be used to achieve the best learning effect [2].

BOPPPS Model

Teaching efficiency is based on the “cone of experience”, which mainly explains the effectiveness of seven learning methods, and the corresponding effectiveness of each method, whether it is reading, audio-visual, demonstration, group discussion, practice Doing exercises and teaching others will be more efficient than the traditional teacher-centered teaching method [3]. The concept that the teacher is no longer the protagonist in the classroom came into being. Teachers need to switch to the role of counseling, and students become the main axis of teaching. Through the presentation and discussion of students, teachers can make timely corrections and produce more efficient learning. Therefore, many flipped teachings have emerged as the times require.

Encouraging students to demonstrate, discuss and implement teaching methods leads to various developments of flipped teaching. Under the promotion of different academic systems, flipped teaching has developed a variety of new teaching methods centered on the concept of “flipped”, including flipped classrooms, MAPS, Xuestar, Math Café, PBL teaching, differentiated teaching, BOPPPS teaching and other teaching methods, no matter what teaching method is used, the teacher is not encouraged to be the protagonist in the classroom. The role of the teacher needs to be transformed into the role of a facilitator in various reversal theories, using

teaching resources and understanding the level gap of different students. The teacher's teaching guidance must be based on the performance of the students to learn the real progress, not the students who can't understand after the lecture. "The essence of flipping is simple, and you need to reflect on your own classroom teaching at all times.

The teaching of this course over the years has been centered around the MAPS teaching method, and its students have achieved rich results in their presentations and exchanges. However, through a large number of mind map thinking, the efficiency of guided courses has been reduced. Therefore, it is necessary to find relevant teaching methods that can take into account both course efficiency and group. The mode of discussion, among which the effective teaching mode BOPPPS has achieved good results when applied to business management and other related courses in relevant literature. The BOPPPS model can be widely applied to various types of teaching, which can ensure the efficiency and effectiveness of teaching [1], so this project is carried out through BOPPPS. Effective teaching structure BOPPPS is a tool for teachers to evaluate teaching plans. The BOPPPS teaching model adopts segmental learning of subsections, which helps students to continue to concentrate [6]. The earliest concept of BOPPPS was proposed by Douglas Kerr of the University of British Columbia in Canada in 1978 [8]. With the concept of modules, the teaching content was divided into unit modules, and a complete evaluation and teaching strategy was implemented in the units strategically [2][18].

The main concept of this project is to teach the course as credits in a modular manner. It includes six major steps, namely the warm-up introduction Bridge-in, the teaching objective or Outcome, and the pre-unit test and pre-assessment, Participatory Learning, Post-assessment and Summary. This project intends to adopt the innovative teaching trilogy of APS teaching method parallel peer scaffolding process and then integrate into BOPPPS mode to be applied to the first-year "management" class of the university department. Through and following the cyclical process of "teaching objectives→teaching behaviors→learning activities→teaching evaluation→teaching objectives", the teaching unit is divided into various operation modes of about 15 minutes, so that students can understand the key points, goals and objectives of each unit of this course. The future application will enable students to pay attention to the basic ability of learning and thinking, and improve students' lack of expression ability through group discussion and sharing. Through and try to apply BOPPPS teaching method in the course, make the course more interesting and achieve the purpose of full learning.

Instructional Design and Planning

APS Teaching Method

1. For the "questioning" strategy, design the questioning method and evaluate the degree of students' understanding of the questioning

method and the degree of learning assistance, and then analyze the degree of interaction with the case study.

2. Through the design and implementation of the “Publication” strategy, evaluate the degree of learning assistance and whether it can guide students to construct high-quality case study learning attitudes.
3. According to the grouping method and scoring mechanism in the “Scaffolding” strategy, evaluate the degree of students' recognition of this strategy and the degree of learning assistance, and explore the degree of interaction with case studies.

Peer Scaffolding Process

Aiming at peers under the scaffolding, through the development of management case studies, so that the interaction and learning among peers can have more fun and enjoyable learning elements, so as to improve learning motivation, promote the development of flow in learning, and finally achieve The improvement of learning effect. Therefore, the objectives of this plan include:

1. Select specific units from the management course to design and evaluate the case studies that facilitate peer-to-peer scaffolding.
2. Under the scaffolding of peers, evaluate the effectiveness of the developed case study in improving students' “learning motivation”, “flow” and “learning effect”.
3. Analyze the correlation of different peer scaffolding combinations to the “learning motivation”, “flow” and “learning effect” generated by case study.

BOPPPS Model

1. Bridge-in: catches the eye

This is the initial stage when students come into contact with the learning unit. The purpose is to attract students' attention, help students easily enter the learning content, and focus on the discussion and sharing of classroom topics. The most important axis of the teacher at this stage is to provide students with interesting information News, sometimes through videos, photos or stories, through things other than books, catches the attention of students, and through simple or brainless questions, makes students respond, all the way to the professional related application, so that Students can smoothly connect the main axis and goal of the course, which takes 1/4 to 1/5 of the unit time.

2. Teaching objectives (Objectives): enter the key points

After attracting students' interest through the aforementioned introduction, teachers can explain the teaching objectives of this unit, establish the learning objectives and expected results of the unit, so that students can clearly grasp the learning direction. The goals must be

achievable and measurable, and teachers will clearly inform students of the key points, values and learning directions of the course.

3. Pre-assessment: assessment of the degree before the unit

Before performing the unit teaching, the teacher needs to understand the students' abilities and grasp the knowledge and cognition of the students. The test at this stage can be composed of simple informal questions and basic formal questions. The difficulty level of the teaching content can be adjusted through the pre-test. Strengthen the close cooperation between teachers and students to promote the achievement of teaching goals. Students also understand the key points of learning through the direction of the pre-test.

4. Participatory Learning: Activating the classroom atmosphere

This part is the focus of the course implementation. It is a two-way teaching method and takes students as the main body. The teacher designs discussion and operation topics suitable for the class level through teaching goal setting, and uses various teaching media and resources flexibly to encourage students to participate in the teaching process. Make students actively learn, pass on the core knowledge of the course through teacher-student activities or interaction between peers, and operate by asking questions at any time, pausing for thinking, instant answers, group discussions, case studies, and situational simulations. Through peer cooperation among classmates, learning exists in the constraints among classmates, which is the key operation of peer scaffolding. Through professional problem design, the teacher enables students to trigger different thinking modes and methods of solving problems, so that the discussion is not only the responsibility of outstanding students in the course, but also needs to define each student's position and function in the group. The teacher will also discuss during the discussion Guiding divergent answers to the right direction requires teachers to have sufficient professionalism and problem-solving skills to make group discussions run smoothly. This teaching method can achieve 50% of the students' learning retention after two weeks. Therefore, for beginners The most basic requirement of students is the participation in group discussions, and through group dialogues, students can strengthen the management of interpersonal relationships.

5. Post-assessment: assess unit learning effectiveness

Through the method of BOPPPS, at the end of the unit, evaluate the students' learning effectiveness. The post-test should correspond to the pre-test and improve the level. It can also effectively evaluate whether the students have achieved the teaching goals of this unit. For the course content of different thematic units, the assessment methods are also different. The teaching content of this course is followed by the assessment method of the post-test using oral reports for flexible operation.

6. Summary: Unit Review and Review

At the end of the unit, the teacher leads the students to summarize the learning points, through the post-test analysis results, appropriately praise the students' efforts and their learning achievements, and strengthen the discussion of the weaker factors of the students, including unit content review, students' oral discussion or feedback by filling out the opinion form, integrate the course content, summarize the learning points, and assign homework, or guide extended thinking, and preview the follow-up course content. Each step of the BOPPPS module has its own meaning. At the beginning of the course, students must be attracted to stimulate learning motivation. During the course, there must be substantial content to strengthen students' concentration. The course provides effective feedback. Using the BOPPPS teaching module, the teaching time can be divided and used in a planned way. Not only to connect a course to its previous and subsequent courses, but also to fully establish a good cycle of teaching objectives, teaching behaviors, learning activities and teaching evaluation in the teaching process.

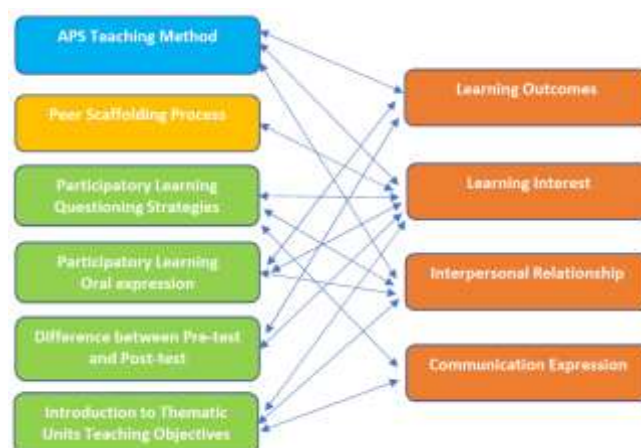
Research Methodology

Study Design and Execution Planning

The research framework of this study is shown in the figure 1 as the follows.

Aiming at the APS teaching strategy constructed in this research, first of all, by asking questions, let students understand the main types of problems to be solved in each unit and the corresponding basic management logic concepts, that is, the learning of management knowledge. After constructing the prior knowledge, the next step is the learning of management skills. The management analysis tools used in this research teaching are mainly case studies, through simple and readily available case studies, the practical solutions to corresponding problems are carried out. Finally, on the basis of knowledge and skills, the results of analysis can be deduced into information, and then used as the basis for decision-making. To achieve management literacy is a kind of ability that can be taken away and used. In other words, even after leaving school and classrooms, it can also be applied to real situations in life or work.

Figure 1. Research Framework



APS Teaching Method

Peer Scaffolding Process

In each teaching unit of case study, data collection is carried out according to the following methods:

(a) Learning motivation: According to the motivation scale (ARCS) established, a learning motivation questionnaire will be made, and the questionnaire will be answered after the case study is implemented [16][21].

(b) Heart flow: The FSG heart flow table will be used, and the questionnaire will be answered after the case study is implemented [16][25].

(c) Unit Learning Effects: The method of pre- and post-experimental testing is adopted, and before and after the case study is carried out, the test is designed according to the learning key points corresponding to the case study; according to the pre-test and post-test results, it is used as the "unit learning effect" data.

BOPPPS Model

Through the teaching of management courses, this project enables students to be familiar with the basic concepts, principles and skills of management, so that they can collect, collate, organize, evaluate and infer results from related practices for analysis. In addition to improving academic performance, I also hope that through the assistance of peer scaffolding in BOPPPS, students can think about the purpose and meaning of learning, and regain their enthusiasm for learning. Through the combination of theory and practice, students actively participate in courses and learn from each other in groups, thereby improving students. Learning effectiveness, learning interest and interpersonal relationship.

Research Problem

This research expects to operate on the following hypotheses:

H1: The background variable is related to “learning effect”, “learning interest” and “interpersonal relationship”.

H2: Post-test - “Thematic unit introduction and teaching objectives” have an impact on “learning interest”.

H3: Post-test - “Participatory Learning - Questioning Strategy” is related to “Learning Effectiveness”, “Learning Interest”, “Interpersonal Relationship” and “Communication Expression”.

H4: Post-test - “Participatory Learning - Speaking and Answering” is related to “Learning Effectiveness”, “Learning Interest”, “Interpersonal Relationship” and “Communication Expression”.

H5: Pre-test and post-tests - “Differences between pre-class and post-class tests” are related to students’ “learning effectiveness” and “learning interest”.

H6: Post-test - “Peer Scaffolding” is related to “Learning Effectiveness”, “Learning Interest”, “Interpersonal Relationship” and “Communication Expression”.

Research Object

This research is mainly aimed at “Management” course in the first semester of the first year of the university. Nearly half of the students enrolled in this department have already learned the relevant knowledge of basic business operations, but the content of higher vocational education is relatively simple. Through effective teaching, the BOPPPS unit is carried out in an efficient manner, and the questioning strategy and oral expression application are carried out through participatory learning. In professional courses, the scope of understanding will be deepened, and for students who are studying courses in related fields for the first time, through the establishment of peer scaffolding, they can guide and strengthen the interaction of interpersonal relationships for all freshmen. The scope of the course refers to the teaching schedule. The main teaching material of this course is the basic management application written by Peter Drucker, which is common in colleges and universities. It is supplemented with practical pictures and videos to show the progress of related courses, and the teaching in group mode is the main axis.

In addition, this plan will use APS to strengthen participatory learning in the course of BOPPPS teaching method, which will be mainly applied to the “management” students in the first semester of the first year of the undergraduate department; a total of one class, each class has about 70 students (Recurring students are not considered), and the same subjects are studied in the classroom for a full semester. The school is affiliated to the technical and vocational system, and the admission channels are diverse, including four categories: application, technical excellence, selection, and distribution. However, each class includes these four types of students, and they all have different professional knowledge, including business and economics, resources, foreign language and even high

school classmates, so the difference is very big. Students who are new to school are not familiar with the school and their classmates. Through different operating modes, they conduct participatory interactive learning in innovative classrooms, and strengthen the learning effects of professional courses and the basic abilities of students through asking questions and expressing.

- Demographic variables: mainly include enrollment channels, statistical survey groups, gender, living expenses and accommodation conditions.
- Comparative analysis is made on the week 1-2, week 5-6, week 9-10, week 13-14 and week 17-18 of the individual student. And through the week 1-2, week 5-6, week 9-10, week 13-14 and week 17-18, the learning effect is compared with the previous years, as a comparison of the learning effect.
- Learning interests: To adapt the questionnaire suitable for this project, including the aspects of emotion, participation, values and self-efficacy in learning [5][14].
- Peer Scaffolding, Questioning Strategies, and Oral Expression: The student self-assessment scale will be the main component.
- Interpersonal relationship: To adapt the questionnaire suitable for this project, including peer relationship and teacher-student relationship [12][23].
- Communication skills: To assess interpersonal communication skills [9][17].
- Unit learning effectiveness: To conduct pre-test and post-test, and use "post-test minus pre-test equals improvement" as the basic reference scale for measuring this aspect.

Implementation Procedures

APS integrated into BOPPPS, this program is used in the teaching mode of different units of management, as shown in the figure below.

Data Processing and Analysis

Quantitative and qualitative explanations are given for the research methods of the above six hypotheses. Based on students' learning outcomes, pre-test and post-measurement results, analyze their understanding of "management", and through the first semester pre-test and post-test, understand students' initial concepts of structural behavior. Through the dimensions of questioning strategies, oral presentations, and peer scaffolding, quantify the results of "learning effectiveness", "learning interest", "interpersonal relationship" and "communication expression", and conduct correlation and impact analysis. Finally, this study will conduct a closed qualitative questionnaire

to understand the students' feedback on the acceptance of the teaching, benefits or suggestions.

Figure 2. APS integrated into BOPPPS



Results And Contributions

This program uses pre-tests to understand the basic knowledge of students, so as to accurately grasp the mentality of all students facing management courses, their cognition of management majors, their interest in case study and analysis, and their past efforts. Through the positive encouragement in the peer scaffolding group and the guidance of warm-up questions before class, this program can effectively grasp the learning status of students from different backgrounds, so that all students can fully immerse themselves in a positive and effective learning atmosphere. It is expected to reverse the learning pressure of the students of the marketing and circulation management department of

the technical vocational system, so that the students of this department can effectively apply the basic knowledge acquired in this course in the face of future business operations and corporate governance.

- a. Develop the “Basic Business Knowledge” teaching materials related to the “Management” course.
- b. Develop and revise the introduction of the “Management” course and key practice-related teaching materials according to the curriculum arrangement.
- c. Adjust the applicability of the pre-test and post-test difficulty of the “Management” course according to the course arrangement.
- d. Develop and revise unit participatory learning and practice tools of the “Management” course according to the curriculum arrangement.
- e. According to the curriculum arrangement, the integrated participatory learning includes the topics of questioning strategies and oral presentations, and conducts elementary, intermediate, and advanced discussion questions according to the topics.
- f. Corrected the mode of operation of peer scaffolding for the “Management” course.

Based on the concepts of management taught in this course, students will be able to logically express and state their professional abilities in the face of future study of other professional courses and views on various things in the future workplace.

- a. Through the unitization of BOPPPS’s effective teaching system, this course and APS expect to stimulate students' interest in learning. Through APS's enhanced participatory teaching, and through this strategy, learning effects, interpersonal relationships, communication expressions, and learning interest can be improved.
- b. Through the pre-test, teachers can understand the prior knowledge of the students. Through the evaluation of the pre-test, it is easier to reinforce the key points and explanations of the course, so as to achieve effective learning strategies.
- c. The questioning strategy operation in the participatory learning of this course allows students to get used to the attitude of actively asking questions, and through the questioning strategy, the teacher can understand that students have doubts about the course, which can be used to strengthen learning. Through this strategy Achieve learning effectiveness, interpersonal relationship, communication expression and learning interest.
- d. The oral presentation operation in the participatory learning of this course allows students to have a logical concept of expression, and through oral presentation, teachers can understand the students’

shortcomings in the course, which can be used to strengthen learning, through this strategy to achieve the improvement of learning effectiveness, interpersonal relationship, communication expression and learning interest.

- e. Through the post-test, teachers can understand the students' understanding of each unit. Through the post-assessment, the key points and explanations of the course are collected and corrected at the final summary to achieve effective learning strategies. Real-time adjustment of the course process and content depth through the unit; to make students learn interest and confidence in the basic field of management courses, enhance the workplace competitiveness of students in this department, and through this strategy to achieve learning effectiveness, interpersonal relationship, communication expression and learning interest. promote.
- f. The peer scaffolding operation in the participatory learning of this course allows students to strengthen their connection with each other. Students encourage each other to increase their investment in the classroom, and through this strategy to achieve learning effectiveness, interpersonal relationships, communication and learning Increased interest.
- g. This course compares the same question types in previous years, aiming at the current freshmen expecting to achieve a better performance in learning their achievements.

Contribution of Online Teaching Results

The M-shaped society is a major test that many countries are facing today, especially in Taiwan. The problem of the M-shaped society also affects Taiwan's education. The approach to transform the future through innovative teaching is an urgent process. It is hoped that through this project, the teaching process will be rebuilt and the learning atmosphere will be reshaped, and the quality of teaching will be improved through the sharing of community results by teachers. This project is trying to deepen the teaching mode of management. Through the construction of teaching mode and the research and development of innovative teaching materials, the quality of teaching can be improved, and it is expected to play a positive role.

Bibliography

1. Allen, IE, Seaman, J., and Garrett, R. (The Sloan Consortium) (2007), "Blending in: The Extent and Promise of Blended Education in the United States," The Sloan Consortium. Available at <http://sloanconsortium.org/publications/survey/blended06>.
2. Berrett, D. (2012), "How Flipping the Classroom Can Improve the Traditional Lecture," The Chronicle of Higher Education, February 19, 2012.
3. Bransford, JD, Brown, AL, & Cocking, RR (1999). How people learning: Brain, mind, experience and school. Washington: National Academy Press

4. Bowen, W., Chingos, M., Lack, K., and Nygren, T. (2012), "Interactive Learning Online at Public Universities: Evidence from Randomized Trials," ITHAKA S+R [online]. [https:// doi.org/10.18665/sr.22464](https://doi.org/10.18665/sr.22464)
5. Cao Danping, Yin Xingyao (2016). Canadian BOPPPS teaching model and its enlightenment to higher education reform. *Laboratory Research and Exploration*, 35 (2), 196-249.
6. Chickering, AW, and Gamson, ZF (1987), "Seven Principles for Good Practice," *AAHE Bulletin*, 39, 3-7.
7. Chung, CC, Dzan, WY, Shih, RC, & Lou, SJ (2015). Study on BOPPPS Application for Creativity Learning Effectiveness. *International Journal of Engineering Education*, 31(2), 648-660.
8. Dale, E. (1946). The cone of experience. In *Audio-visual methods in teaching*. (pp. 37-51). New York: Dryden Press. In DP Ely & T. Plomp (Eds.), *Classic Writings on Instructional Technology* (Vol. 1, pp. 169 -180). Englewood: Libraries Unlimited, Inc.
9. Dale, E. (1953). What does it mean to communicate? *AV Communication Review*, 1(1), 3-5.
10. Guo Jiahua (2019). Research on the Influence of Teaching Strategies of English Story Reading and Drawing on English Literature Learning Interest and Learning Effect of Vocational Students, Chiayi University Department of Education, unpublished doctoral dissertation, Chiayi City.
11. Haidet, P., Morgan, RO, O'Malley, KO, Moran, BJ, and Richards, BF (2004), "A Controlled Tial of Active Versus Passive Learning Strategies in a Large Group Setting," *Advances in Health Sciences Education*, 8, 9-30.
12. He Lijun (2005). Research on the Effects of Communication Media Cognition, Interpersonal Communication Competence, and Communication Satisfaction on Self-Efficacy — Taking Electronic Information Industry and Banking Industry as Examples (Unpublished master's thesis). Ming Chuan University, Taipei City.
13. Huang Ruyi (2018). Research on the influence of MAPS teaching method on Chinese learning motivation and learning effect of technical high school students. Master's thesis, Institute of Technical and Vocational Education, National Taipei University of Technology, New Taipei City.
14. Huang Shufen (2006). Research on Life Attitudes and Interpersonal Relationships among Senior Elementary School Children (Unpublished master's thesis). National Kaohsiung Normal University, Kaohsiung City One-year plan format page 24
15. Hong Shuyi (2017). The unit of "giving and receiving" - presented in the form of BOPPPS modules. The eighth issue of *General Education Journal of National Defense University*.
16. Jane Jiayi (2012). Exploring the Effects of Personality Traits and Interpersonal Relationships on Depression in Middle School Students-Taking Interpersonal Relationships as Mediating Variables (Unpublished master's thesis). National Yunlin University of Science and Technology, Yunlin County.
17. Lou, S.-J., Dzan, W.-Y., Lee, C.-Y., & Chung, C.-C. (2014). Learning effectiveness of applying TRIZ- integrated BOPPPS. *International Journal of Engineering Education*, 30(5), 1303-1312.
18. Lin Jiafen (2013). Action Research on Using Group Mind Maps to Improve Oral Expression Ability - Take the fifth grade social science teaching as an example. Master's thesis, Department of Social and Regional Development, National Taipei University of Education, New Taipei City.

19. Lin Shuhua (2002). Research on emotional management and interpersonal relationship of elementary school children (unpublished master's thesis). National Pingtung Teachers College, Pingtung City
20. Margulieux, LE, Bujak, KR, McCracken, WM, and Majerich, DM (2014), "Flipped, Blended, Flipped, and Inverted: Defining Terms in a Two Dimensional Taxonomy," Paper accepted to the 12th Annual Hawaii International Conference on Education, Honolulu, HI, January 5-9.
21. Monnie McGee, Lynne Stokes & Pavel Nadolsky (2016) Just-in-Time Teaching in Statistics Classrooms, *Journal of Statistics Education*, 24:1, 16-26.
22. Novak, G., Patterson, E., Gavrin, A., and Christian, W. (1999), *Just-in-Time-Teaching: Blending Active Learning with Web Technology*, New York: Prentice Hall.
23. Spitzberg, BH and William, RC *Interpersonal Communication Competence*, Beverly Hills, Calif: Sage, 1984.
24. Wang Dacheng (2015). Investigation and research on the learning outcomes of project-oriented learning for college students. Master Thesis, Department of Educational Technology, Tamkang University, New Taipei City.
25. Wang Zhengzhong (2016). *My grassroots flip - MAPS teaching method*. Taipei City: parent-child world.