

## Research Article

# Professional Training and Tutorial Mode of Social Media SPOCS under the Background of “1+x” Certificate System

Fang Zheng 

*School of Modern Financial, Jiayingnanhu University, Jiaying 314001, China*

Correspondence should be addressed to Fang Zheng; [zhengfang@zjxu.edu.cn](mailto:zhengfang@zjxu.edu.cn)

Received 30 May 2022; Revised 20 June 2022; Accepted 22 June 2022; Published 13 July 2022

Academic Editor: Baiyuan Ding

Copyright © 2022 Fang Zheng. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

SPOCS is a brand-new teaching concept, which focuses on reflecting the dominant position of students. The application of SPOCS guidance mode in international trade practice teaching will help stimulate students' interest in knowledge, improve classroom-teaching effect, and improve classroom teaching quality. In order to fully mobilize students' subjective initiative and creativity, we should cultivate students into new talents with strong comprehensive quality. Let students study actively and autonomously under the correct guidance of teachers. From the perspective of “1+x” certificate system, this paper introduces the necessity of developing application-oriented undergraduate education. This paper expounds the requirements of the “1+x” certificate system for the classroom teaching of applied economics and analyzes the problems existing in the classroom teaching. This paper puts forward the reconstruction of efficient classroom teaching mode, makes great efforts to deepen the cooperation between industry and education in classroom teaching, and realizes the goal of “1+x” certificate system to cultivate talents. A three-stage tutoring mode of “knowledge transfer before class,” “knowledge internalization in class,” and “evaluation and reflection after class” is designed. Practice has proved that the combination of microclassroom and flipped classroom is an effective strategy to improve the effect of learning knowledge. It provides some references and suggestions for front-line teachers to implement flipped classroom teaching in the future.

## 1. Introduction

With the rapid development of information in modern society, new production methods, business circle models, and industrial structures have gradually formed, and the occupational positions of workers have also undergone new changes [1]. New occupations are emerging in an endless stream, the occupational cycle is shortening, the phenomenon of cross-integration of various occupations is obvious, and the requirements for knowledge and ability of occupational positions are also greatly improved [2]. From 2019, through the “1+x” certificate system, the long-standing serious deviation between education and employment needs in school enterprise cooperation can be corrected. At the same time, the “1+x” certificate system is extensible, which can implement the standardized operation of education for college students, and also provide standards and services for

the re-education of social technical personnel, so as to realize the dual services for colleges and society [3].

Through a “combination of education and training” and “combination of books and certificates,” high-quality talents which are urgently needed by the society, can be cultivated, and the development and utilization of human resources can be fully realized [4]. In the teaching reform, the use of the SPOCS mode mainly changes the traditional teacher-student relationship by flipping the arrangement of knowledge imparting and internalizing. In the teaching process, teachers provide teaching resources, and then students learn independently before class. Through classroom knowledge question and answer, exchange and discussion, students' thinking can be expanded, and students can develop the habit of autonomous knowledge and form a certain sense of innovation [5]. There are many definitions of Social Media in the former academic circles [6].

It is generally believed that compared with traditional media, Social Media has the following characteristics: immediacy, openness, personalization, focus, etc.[7]. The theoretical system of international trade is huge, and the theory is abstract and difficult to understand (such as marginal utility, consumer surplus, price discrimination, return to scale). Classroom teaching alone cannot meet the knowledge needs of students for this course [8]. The SPOCS tutorial mode is applicable to the teaching of international trade practice courses. The adoption of this tutorial mode can stimulate students' interest in knowledge, improve classroom-teaching effect, and improve classroom teaching quality [9]. The SPOCS teaching method can also be called the inverted classroom teaching method, which is a subversion and innovation of traditional teaching. This teaching method disrupts the traditional classroom teaching sequence, flipping students to learn new knowledge before class, and teachers only guide students to consolidate new knowledge through exercises and other methods in the classroom [10]. This paper mainly focuses on media economics and Social Media. In the continuous expansion of ideas and literature combing, it has discovered the important but still in the new research field of the relationship between the two, which is the Social Media platform development mode to be discussed in this paper, thus, generating the research motivation.

This paper analyzes the characteristics and economic process of the current social media development economics, discusses the development trend and influence of the current social media from the perspective of political economics and communication political economics, and puts forward theoretical prospects. The innovative contribution of this paper lies in taking the development mode of social media SPOCS platform as the research object, and this paper discusses the economic motivation behind it. Based on the value embodiment of social media SPOCS development, this paper analyzes how its value is generated. SPOCS counseling mode emphasizes the organic combination of students' extracurricular online knowledge and classroom interactive knowledge. The research in this paper has helped the students understand the key points and difficulties in the knowledge content and can study pertinently in the classroom.

## 2. Related Work

After Wang entered the Internet era, many new economic forms appeared: eyeball economy, attention economy, sharing economy, meaning economy, long tail economy, and platform economy[11]. The fundamental significance of Qian Y's "1+x" certificate system is to cultivate modern compound technical and technical talents, that is, to enable students to improve their diverse skills on the basis of obtaining academic certificates, so as to extend the depth and breadth of skills and enhance their employment competitiveness[12]. Zheng et al. proposed and even recently appeared the concept system of the Internet celebrity economy. The commonality is a summary of a new value model in the SPOCS and practice of the Internet delivery

platform. The Internet presents a new value model. The value model of Internet is constantly innovating, and the profit forms and tools are constantly changing, which not only reveals the great vitality of the development of the Internet economy but also reflects the singleness of traditional industry forms and profit models [13]. Dai believes that the definition of Social Media should be based on three clues: the evolution process of the concept, the basic characteristics of the relative stability of Social Media, and the different situations and specific directions of the concept [14]. Luo et al. are gradually taking shape of various new teaching methods with microclass, microvideo, and Mu class as the media, and SPOCS methods such as personalized knowledge, mobile knowledge, and flipped knowledge are also gradually prevailing [15]. Taking the school as the main place for imparting knowledge and skills and cultivating quality talents, an X must comply with the requirements of educational informatization [16]. Liu has also made key changes in teachers' curriculum development, the establishment of education and tutorial mode, the updating and transmission of knowledge materials, and students' knowledge methods. This is in line with the development trend of the times and an inevitable requirement of education development [17]. Based on the political economy of communication, Shu et al. pointed out the problems of digital labor and the integration of production and consumption involved in Social Media, but they mainly analyzed from the perspective of culture and communication, and did not analyze the political economy characteristics of Social Media. For an in-depth analysis [18], Hu from Webl.0. The transformation from "media-people" in the O era to "people-people" in the Web 2.0 era, the most essential connotation lies in the emergence and construction of platforms. Information dissemination platforms are not only a means of organizing and integrating information resources, but it is also an important business development model for Social Media institutions and enterprises that provide information services [19]. Bao et al.'s slogan of "creating a Social Media platform" is also increasingly applied to other industries. From the perspective of political economy, what are the characteristics of production and consumption of the current Social Media? These characteristics determine which Social Media are producing negative effects? These problems deserve further study.

## 3. Methodology

*3.1. The Application of the SPOCS Tutorial Model in the Teaching of International Trade Practice.* International trade practice course is a comprehensive course with strong theoretical and practical characteristics of foreign activities. Facing this course, if students want to learn solidly, they must increase their study time and invest more energy. Self-study before class, which is emphasized by the SPOCS tutorial mode, undoubtedly breaks through the limitation of classroom time and creates conditions for students to master this knowledge. The teaching models have highlighted the students' dominant position in teaching. It plays a very important role in mobilizing students' initiative, enthusiasm, and creativity in learning. The diversification and

individualization of teaching mode is one of the directions of the new curriculum reform. It is a means to promote the healthy growth and all-round development of students. The course objectives have clear requirements for students: enhance physical fitness, master and apply basic sports, and health knowledge and sports skills. Cultivate sports interests and hobbies and form the habit of persisting in exercise. Have good psychological quality, show the ability of interpersonal communication and the spirit of cooperation. Through improving the students' sense of responsibility for their personal health and group health, a healthy lifestyle will be formed. Carry forward the spirit of sports and form a positive, optimistic, and cheerful attitude toward life. Through one-on-one tutoring, teachers can effectively solve problems encountered by students in self-study, so that students can truly master the knowledge they have learned. This satisfies the individualized knowledge needs of students to the greatest extent, and at the same time improves the teaching efficiency and the teaching effect. In the SPOCS tutorial mode, the teaching activities are composed of four major parts: the preparation of teaching materials, students' autonomous knowledge, classroom teaching activities, and teacher evaluation and summary. Its tutorial model is shown in Figure 1.

The preparation of teaching materials is the basis for the implementation of the SPOCS tutorial mode. The preparation of teaching materials includes the following two contents: first, make teaching videos and upload them to relevant network platforms to ensure that students can watch them online. The second is to use the network platforms such as WeChat group, the spike group, and the Learning Course group to realize the sharing of various knowledge resources such as electronic courseware, practice question bank, case materials, so as to provide convenience for strengthening the interaction between teachers and students and summarizing the knowledge experience of International trade practice courses. SPOCS is an online course-teaching model that emerged in the postmoors era. Small and piae are relative to massive and open in MOCS. It tends to be small-scale, localized, and personalized. At present, there are many problems in College English Teaching in China, including the difference of local teaching level, the imbalance of teaching resources, and so on. College English teaching reform is in progress and will always be in progress. The introduction of SPOCS teaching mode into College English Teaching in China will help to solve the problems existing in College English teaching. Students' autonomous knowledge is the key to the implementation of the SPOCS tutorial mode. In the SPOCS tutorial mode, teachers no longer arrange the teaching of course content in the classroom, but answer questions and conduct knowledge expansion training for students. The SPOCS tutorial mode of O-PIRTAS has been verified through teaching practice to verify the positive impact of its mode on teaching. The O-PIRTAS SPOCS mode is shown in Figure 2.

This model designs of the SPOCS from the perspective of curriculum (preparation stage of SPOCS) and teaching methods (implementation stage of SPOCS). The preparation

stage is to select the teaching content, design the teaching plan and courseware, record the teaching video and prepare the teaching materials. In the implementation stage, seven links, namely, setting teaching objectives, preparing activities before class, knowledge teaching videos, reviewing the contents before class, conducting classroom tests, conducting classroom activities, and summarizing and improving the class, are completed in turn. At the same time, the feedback from teaching and knowledge can be obtained according to the summarizing and improving link, so as to prepare for the next class, so as to start the next circular teaching process of O-PIRTAS. Therefore, it is not difficult to see that the O-PIRTAS model has strong adaptability, operability, and flexibility in practice. The teaching goal of classroom teaching activities is to help students deepen and expand their theoretical knowledge, and at the same time, cultivate their study habits of linking theory with practice and enhance their practical ability. Encourage students to share their experiences and achievements in independent knowledge and classroom knowledge with their classmates in the classroom, so as to realize the common progress and improvement of all students.

Under the pilot implementation of the "1 + x" certificate system, although teachers have strengthened the teaching of skills and technologies in classroom teaching and paid more attention to the improvement of students' various professional abilities, it is always difficult to break through the shackles of traditional teaching methods due to the firm traditional educational concept of teachers. The classroom uses more old and backward teaching methods such as teaching and demonstration, and students passively construct the knowledge framework, which leads to the boring of the whole teaching process. It is also difficult for students to get more knowledge experience, and more students are less interested in knowledge so that it is difficult to obtain the expected teaching effect. Teachers should change their role from "knowledge imparting" to "knowledge guide," and the classroom should also change from closed to open. Teachers can set up questions to guide knowledge, so that students can preview and consult relevant materials in advance, help students construct knowledge situations, and have an overall framework for knowledge new knowledge. In addition, the classroom should adopt more independent and cooperative inquiry knowledge methods to mobilize students' enthusiasm and promote students' active knowledge. Of course, this is not to weaken teachers' role in classroom teaching. On the contrary, teachers should study and practice in depth, so as to give timely guidance to students when they are in doubt. Classroom teaching should also create the situation of integration of production and education, take the actual work tasks as the main line, highlight the cultivation of students' ability and the development of their thinking, and form a multi-dimensional interactive space. Under the "1 + x" certificate system, enterprises should be incorporated into the classroom system, more emphasis should be placed on practice and application, a new integrated teaching of theory and practice should be established, and a model of on-campus theoretical knowledge + off-campus practical training should be formed. The school evaluation method

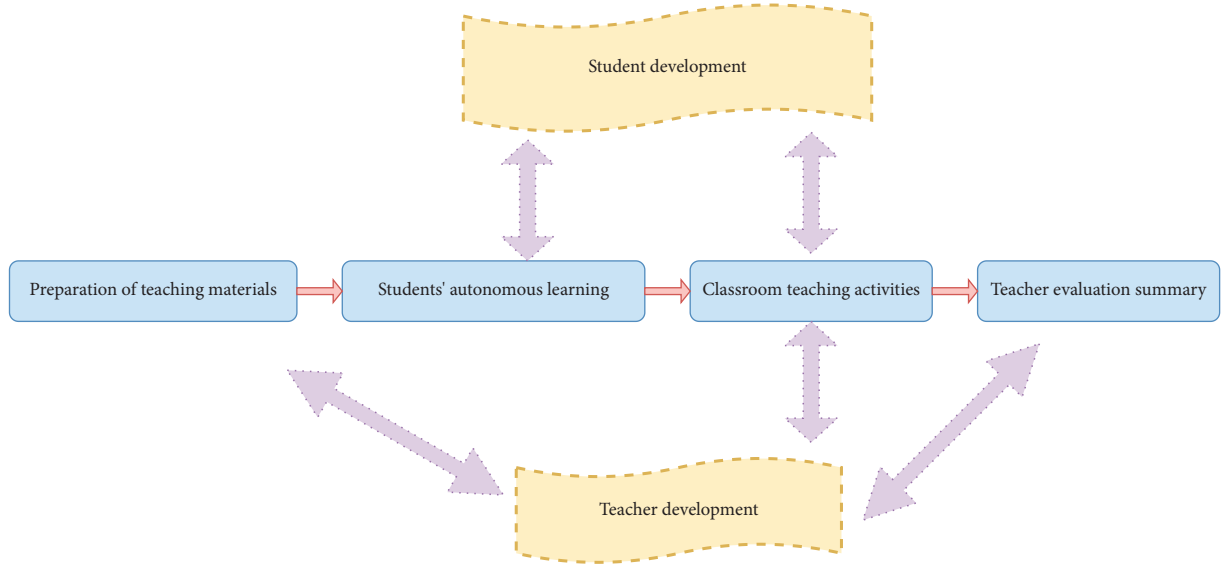


FIGURE 1: Education activity model under SPOCS tutorial mode.

needs to break through the way that only the teacher is the main body of the assessment. The school can introduce enterprise personnel into the campus to guide students' practical operation, which constitutes the teacher's mastery of their knowledge, the enterprise's implementation of their professional ability, and the students' teamwork. The subject of examination.

**3.2. Fuzzy Model Algorithm Based on Microeconomics.** The traditional teaching mode is not conducive to cultivating students' abilities in all aspects. The traditional teaching mode is teacher-centered. It only emphasizes teachers' teaching and ignores students' learning. All teaching designs focus on how to "teach" and unilaterally exaggerate the leading role of teachers. It regards students as the object of knowledge inculcation, so that students are always in a passive position in the process of teaching and learning. The reason why the traditional tutorial mode is not helpful to students' creativity is that it deprives students of the most vivid, rich, and powerful emotional factors, leaving only mechanical rational training and even simple knowledge indoctrination." In the fuzzy unicast road mountain selection algorithm, students' teaching is classified, and then teaching selection is made according to different teaching categories. This idea can also be used in online and offline tutorial model algorithm. It is known that an undirected connected graph  $G = (v, e)$ , where  $v$  is the set of nodes and  $e$  is the set of edges.

Because the smaller the heuristic cost sum is, the closer it is to the Pareto optimal state under Nash equilibrium.

When building a multicast tree, the heuristic cost of the multicast tree is pursued to be the smallest, that is,

$$\min \sum_{l_{wt} \in T e_n} \sum_{e_{ij} \in l_{wt}} T_1(\Omega, ws_{ij}, us_{ij}). \quad (1)$$

*Step 1.* Initialization:  $n = 0$ ,  $mT0 = \{v\}$ ,  $Mo = M$ ,  $K = S$ . For every  $v \in V$  and  $v \neq V$  let

$$\lambda'(v) = 0, \lambda'(v) = m'. \quad (2)$$

- (i)  $T_t(v_h) = 0$ ;
- (ii)  $mbw(v_h) = +\infty$ ;
- (iii)  $mdel(v_h) = 0$ ;
- (iv)  $mjitter(v_h) = 0$ ;
- (v)  $mioss(v_h) = 0$ .

Calculate the following values:

- (1)  $mbw(v_t) = \min\{mbw(v_k), bw(v_h, v_t)\}$ ;
- (2)  $mdel(v_t) = mdel(v_k) + del(v_k, v_t)$
- (3)  $mjitter(v_t) = mjitter(v_k) + jitter(v_k, v_t)$
- (4)  $mioss(v_t) = 1 - (1 - mioss(v_k)) * (1 - ioss(v_k, v_t))$

This requires that in the process of applying the discussion teaching method to the teaching of international trade practice, we should transform the passive position of students in the traditional tutorial mode, that is, the object position as the subject position. In the cultivation of students' subject spirit, we should emphasize giving students more autonomy, and grant students the freedom to choose international trade practice discussion topics, conduct independent exploration, negotiate and discuss with each other, express their own unique opinions, and self-display their achievements. The right to self-evaluation and reflection enables students to truly become the masters of the knowledge behavior of international trade practice courses, always in a stable and independent position in the process of "teaching" and "knowledge" of the course discussion, and truly take students as the main body and center.

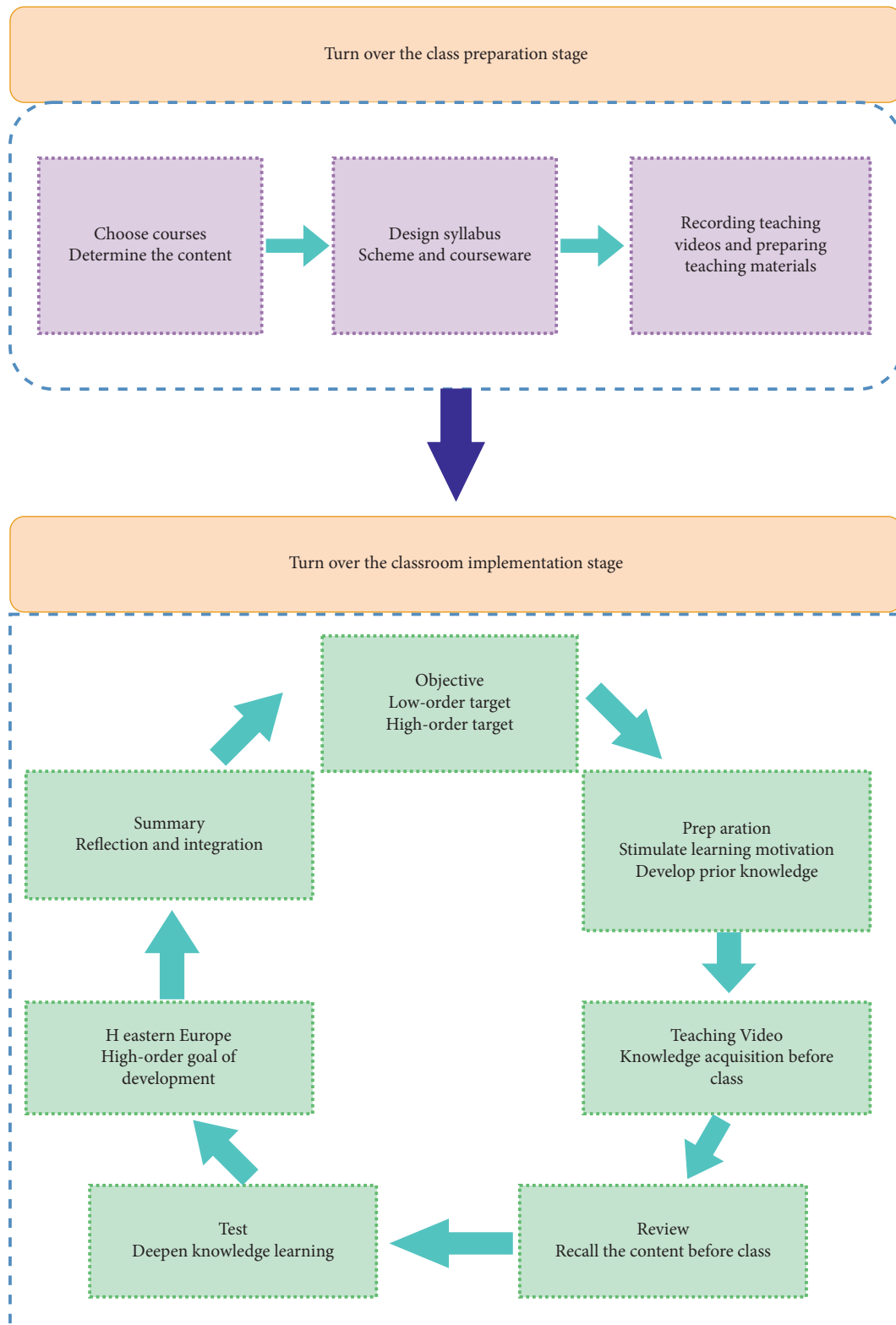


FIGURE 2: The O-PIRTAS SPOCS mode.



#### 4. Result Analysis and Discussion

In order to have a more objective and comprehensive understanding of students' knowledge situation, this paper once again uses the questionnaire method to investigate the influence of SPOCS on knowledge from the aspects of students' preclass knowledge mastery, classroom knowledge effect, and overall view of SPOCS. According to the survey of students' knowledge mastery in preclass knowledge stage, from three aspects of "very good," "average," and "poor," the students' knowledge mastery before class is shown in Figure 3.

The abscissa of Figure 3 represents the number of student samples surveyed. Ordinate represents students' knowledge mastery. As shown in Figure 3, in the preclass autonomous knowledge stage of the SPOCS, most of the students use the class video to master the knowledge and skills they have learned well and better by pausing or watching repeatedly. For these students, teachers should guide students to change their minds and let them know that we are about to enter a knowledge society, and autonomous knowledge is an inevitable trend of development. The effect of classroom knowledge is mainly investigated from two aspects: students' views on the content of classroom activities and their mastery of classroom knowledge. Students' views on the content of classroom activities are shown in Figure 4.

About 89% of the students think that the activities in class are appropriate, reasonable, and targeted, which can stimulate interest in knowledge, actively participate in class discussions and positive thinking, master key and difficult knowledge in limited time, and improve knowledge efficiency.

In order to scientifically test the difference between, before, and after the experiment, the author carried out the traditional "lecture-reception" tutorial mode for two classes, and then changed the seminar tutorial mode to Class N181 of Textile, while Class N171 of Textile still adopted the traditional tutorial mode. Now, the knowledge effects of the first two months of the experimental class and the control class are compared and analyzed in terms of grades, and the results are shown in Table 1:

After the teaching practice, in order to make the test results more scientific and comparable, the author tests the experimental class and the control class. The experimental class and the control class adopt unified test questions and scoring standards. The inspection results are shown in Table 2:

From the comparison of the overall distribution of the posttest scores of the two classes, it can be seen that there are significant differences in almost every fractional distribution of the posttest scores. The average score of the experimental class is 82.1 and that of the control class is 76.97. The posttest scores of the experimental class are significantly higher than those of the control class. This shows that the implementation of flip teaching in the course of international trade practice is helpful to the improvement of students' academic performance. After a period of preclass, microclass study, they found that preclass study can make classroom

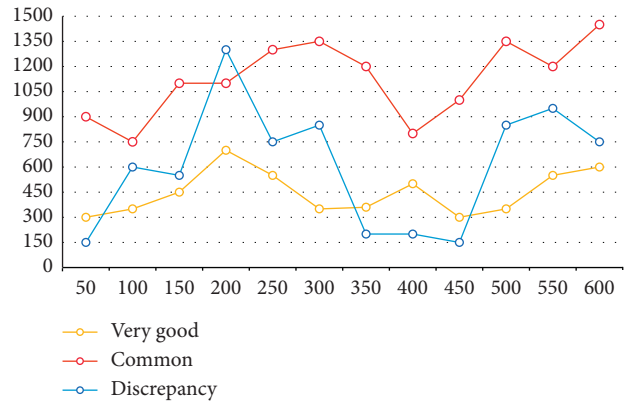


FIGURE 3: Students' mastery of knowledge before class.

problem exploration and practice activities successfully completed. Some students even search for relevant videos on the Internet to study when they encounter problems in other subjects to make up for their knowledge deficiencies. Figure 5 shows the statistical results of the cultivation of students' thinking and cooperative inquiry ability in SPOCS.

After the scientific experiment of teaching practice, the author conducted a questionnaire survey to investigate the students' knowledge motivation, and the control of survey results is shown in Figure 6.

Through comparing the language expression ability, information collection ability, and innovation ability of the control class and the experimental class. The results are as follows: as shown in Figure 7.

The satisfaction survey on SPOCS knowledge is carried out from five levels: "very much like," "somewhat like," "general," "dislike," and "very dislike." The statistical results of students' satisfaction with SPOCS knowledge are shown in Figure 8 shown.

As can be seen from Figure 7, 86% of the students like to flip the classroom knowledge. They believe that preclass knowledge can repeatedly watch microclass videos and master the basic knowledge. Besides, there is more time for inquiry and practice in the classroom, which can consolidate and sublimate what they have learned in a relaxed atmosphere. At the same time, they can exchange ideas with their peers and groups, pool ideas, and deepen the friendship among classmates. Therefore, students are highly satisfied with the SPOCS teaching. It can be seen from the questionnaire survey on the effect of SPOCS that most students have a positive attitude toward the SPOCS tutorial mode. According to the above analysis, teaching with SPOCS can stimulate students' interest in knowledge accumulation and project design, and deepen their interest in further learning of the course. The degree of understanding and mastery of the knowledge learned can improve students' knowledge efficiency, autonomous knowledge ability and thinking, and inquiry ability.

After the implementation of SPOCS teaching, through the comparison of test scores and classroom homework completion speed between the control class and the experimental class, it is concluded that the students' scores of the experimental class are significantly higher than those of

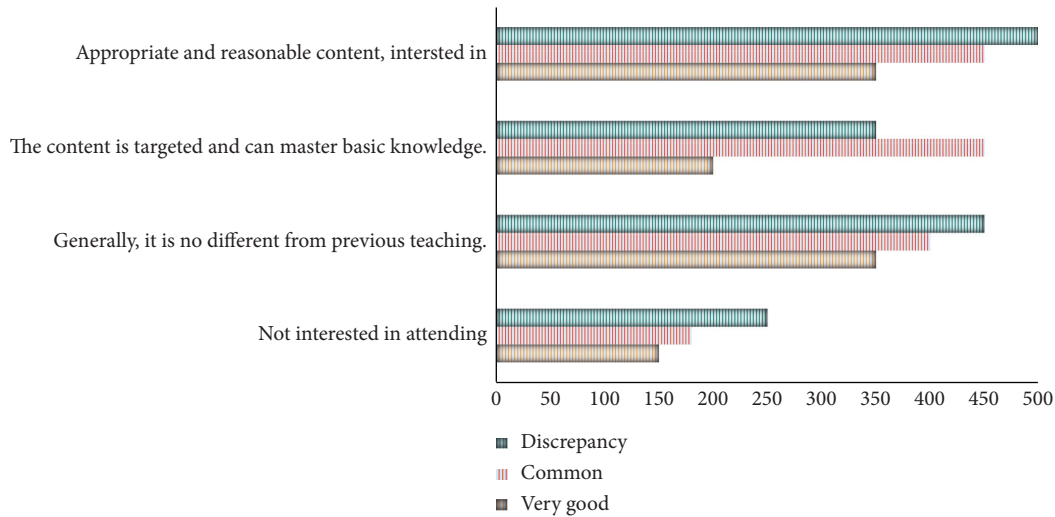


FIGURE 4: Students' views on classroom teaching content.

TABLE 1: Comparison of the pretest scores of the control class and the experimental class.

Score/class	Experimental class	Control class
100-90	4	3
89-800	6	7
79-70	19	15
69-60	26	25
Below 60 points	4	6
The average score	72.35	71.68

TABLE 2: Comparison of posttest scores of control class and experimental class.

Score/class	Experimental class	Control class
100-90	15	3
89-800	20	20
79-70	13	10
69-60	9	10
Below 60 points	0	0
The average score	82.1	76.97

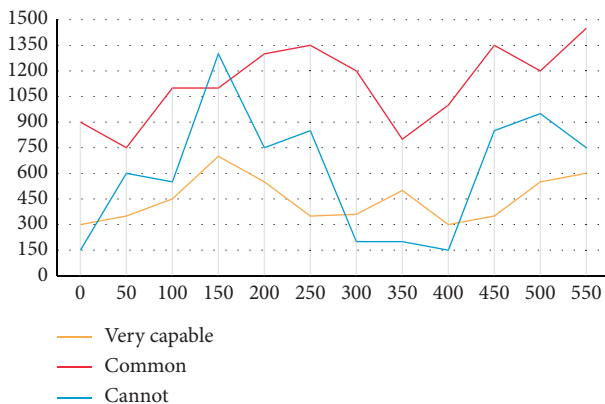


FIGURE 5: Analysis of the cultivation of students' independent inquiry ability of thinking.

Influence of flipped classroom teaching method on students' learning enthusiasm

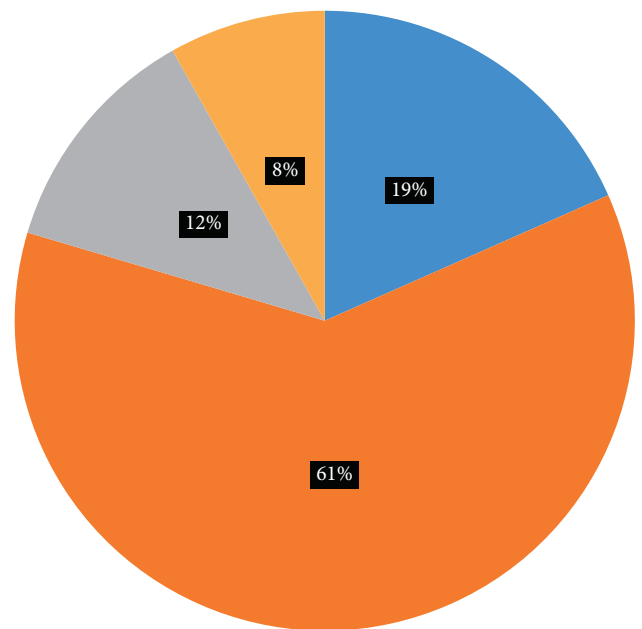


FIGURE 6: The influence of SPOCS teaching on students' knowledge enthusiasm.

FIGURE 6: The influence of SPOCS teaching on students' knowledge enthusiasm.

the control class, and the homework completion speed is significantly faster than that of the control class. In addition, after the questionnaire survey on the effect of SPOCS, the statistical results show that in SPOCS teaching, students' knowledge mastery is good, classroom knowledge efficiency is high, and their autonomous knowledge ability and thinking, and exploration ability have also been significantly improved. They have a high acceptance and satisfaction with the SPOCS tutorial model. It is hoped that teachers will continue to adopt this tutorial model in knowledge development and project design courses.

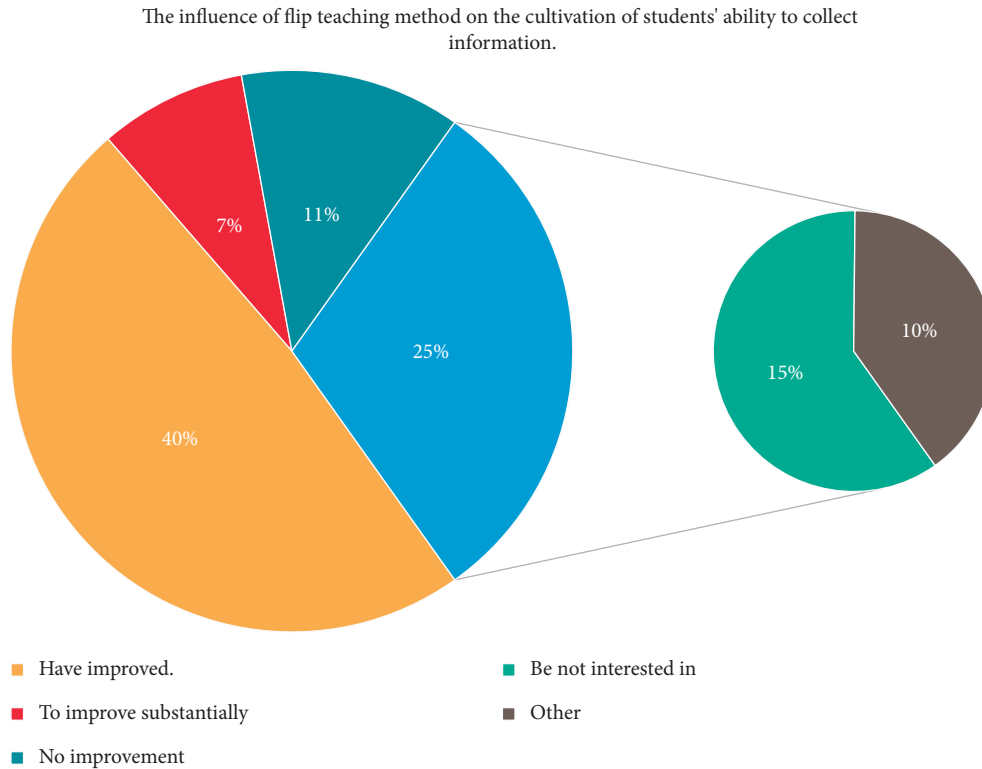


FIGURE 7: The influence of flip classroom teaching method on the cultivation of students' ability to collect information.

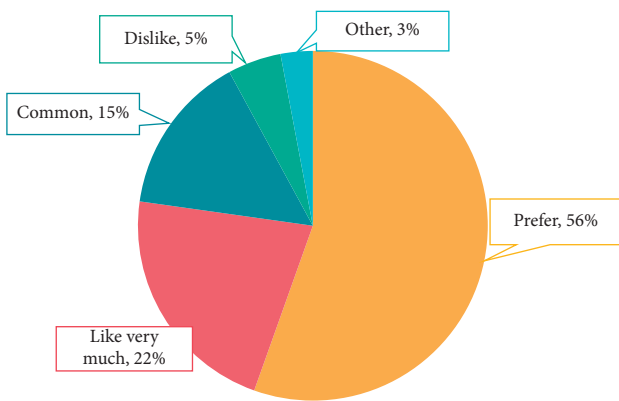


FIGURE 8: Students' satisfaction with SPOCS knowledge.

### 5. Conclusions

Under the “SPOCS” teaching concept, the college economics and management courses should combine the students’ actual knowledge, make effective teaching resources, and fully mobilize the students’ knowledge enthusiasm through extracurricular knowledge. Through the reform of the economics course guidance mode, combined with the “1 + x” system, with the help of cloud classroom, Tencent classroom, and other platforms, students are guided to actively participate in online knowledge interaction, so as to achieve effective monitoring of the teaching process and evaluation of knowledge effects. By using the online discussion function, students can fully mobilize their knowledge enthusiasm

and stimulate their interest in knowledge. Students can communicate anytime, anywhere. The “1 + x” certificate system is a new system design that the development of vocational education follows the problem orientation. It is of great significance to highlight the characteristics of vocational education, build an employment oriented vocational education talent training model, and improve the quality of talent training.

Integrating the “mooc + spoc + spocs” mixed tutor mode under the “1 + x” certificate system” of applied undergraduate education is an effective way to optimize educational resources, which not only saves a lot of teachers but also improves students’ knowledge efficiency. The application of diversified teaching mode can make up for some shortcomings of traditional teaching. Improving students’ knowledge efficiency is an important innovation of Applied Undergraduate Education in the process of cultivating applied talents. To sum up, the research results of this study are as follows: a three-stage counseling model of “preclass knowledge transfer,” “in class knowledge internalization,” and “after class evaluation and reflection” in professional course teaching is designed. Practice has proved that the combination of microclassroom and flipped classroom is an effective strategy to improve the effect of learning knowledge. Practice has proved that the flipped classroom teaching based on microcurriculum is beneficial to stimulate students’ interest in knowledge and cultivate students’ independent knowledge, thinking, and cooperative exploration ability. It provides some references and suggestions for front-line teachers to implement flipped classroom teaching in the future.



## Data Availability

The experimental data used to support the findings of this study are available from the author upon request.

## Conflicts of Interest

The author declared that they have no conflicts of interest regarding this work.

## Acknowledgments

This work was supported by Zhejiang Higher Education Association 2020 higher education Research Project “Research on Innovation of Professional Talent Training Mode Based on “1+x” Certificate System” (project no. KT2020026).

## References

- [1] G. Foster and S. Stagl, “Design, implementation, and evaluation of an inverted (flipped) classroom model economics for sustainable education course,” *Journal of Cleaner Production*, vol. 183, no. MAY 10, pp. 1323–1336, 2018.
- [2] D. A. Morton and J. M. Colbert-Getz, “Measuring the impact of the flipped anatomy classroom: the importance of categorizing an assessment by Bloom’s taxonomy,” *Anatomical Sciences Education*, vol. 10, no. 2, pp. 170–175, 2017.
- [3] T. Chia-Wen, P.-Di Shen, C. Yi-Chun, and L. Chih-Hsien, “How to solve students’ problems in a flipped classroom: a quasi-experimental approach[J],” *Universal Access in the Information Society*, vol. 16, no. 1, pp. 1–9, 2017.
- [4] J. Xiang, “Evaluation of the college English flipped classroom teaching model based on data mining algorithms,” *Mobile Information Systems*, vol. 2021, Article ID 1407407, 10 pages, 2021.
- [5] H. Mohamed and M. Lamia, “Implementing flipped classroom that used an intelligent tutoring system into learning process,” *Computers & Education*, vol. 124, no. SEP, pp. 62–76, 2018.
- [6] E. Ng, “Integrating self-regulation principles with SPOCS pedagogy for first year university students[J],” *Computers & Education*, vol. 126, p. S0360131518301775, 2018.
- [7] A. M. Persky and A. Hogg, “Influence of reading material characteristics on study time for pre-class quizzes in a flipped classroom,” *American Journal of Pharmaceutical Education*, vol. 81, no. 6, p. 103, 2017.
- [8] Y. Yanfei, “Online and offline mixed intelligent teaching assistant mode of English based on mobile information system,” *Mobile Information Systems*, vol. 2021, Article ID 7074629, 6 pages, 2021.
- [9] J. Chen, H. Qian, Q.-H. Zhao, L. Yang, and C. H. E. N. Xiaomin, “Constructing and exploration of multi-layer education system of polymer comprehensive experiment[J],” *Polymer Bulletin*, vol. 7, pp. 1–5, 2020.
- [10] Y. Wang, “A study on college PE teaching system reform design based on SPOCS[J],” *Revista de la Facultad de Ingenieria*, vol. 32, no. 8, pp. 476–482, 2017.
- [11] Y. Qian, C.-X. Li, X.-G. Zou, X.-B. Feng, M.-H. Xiao, and Y.-Q. Ding, “Research on predicting learning achievement in a flipped classroom based on MOOCs by big data analysis[J],” *Computer Applications in Engineering Education*, vol. 30, no. 4, pp. 222–234, 2021.
- [12] X.-Li Zheng, H.-S. Kim, W.-H. Lai, and G.-J. Hwang, “Cognitive regulations in ICT-supported flipped classroom interactions: an activity theory perspective,” *British Journal of Educational Technology*, vol. 51, no. 1, pp. 103–130, 2020.
- [13] D. Y. Dai, “Envisioning a new foundation for gifted education: evolving complexity theory (ECT) of talent development,” *Gifted Child Quarterly*, vol. 61, no. 3, pp. 172–182, 2017.
- [14] H. Luo, T. Yang, and X. Jin, “Impact of student agency on knowledge performance and knowledge experience in a SPOCS[J],” *British Journal of Educational Technology*, vol. 50, no. 2, pp. 1–10, 2019.
- [15] Y. An and C. Qu, “A hierarchical learning model based on deep learning and its application in a SPOC and flipped classroom[J],” *International Journal of Emerging Technologies in Learning (IJET)*, vol. 16, no. 9, pp. 76–93, 2021.
- [16] L. Liu, “Research on IT English flipped classroom teaching model based on SPOC,” *Scientific Programming*, vol. 2021, no. 5, pp. 1–9, 2021.
- [17] L. Shu, G. Li, and X. Cao, “Research on the optimization and innovation of art SPOCS teaching based on the network environment[J],” *Boletin Tecnico/technical Bulletin*, vol. 55, no. 11, pp. 672–678, 2017.
- [18] Z. Hu, “Research and practice on the tutorial mode of course project – take the “credit rating” course as an example[J],” *International Journal of Electrical Engineering Education*, vol. 57, no. 3, 002072092092854, 2020.
- [19] Y. Bao, “Teaching and practice research on flipped classroom of vocational English major writing course based on MOOC [J],” *Revista de la Facultad de Ingenieria*, vol. 32, no. 15, pp. 73–77, 2017.