Research on Teaching Reform of E-commerce Based on Short Video

Lili Sun

School of Logistics Management and Engineering, Zhuhai College of Science and Technology, Zhuhai City, Guangdong, 519041, China

Abstract: Some universities" courses are too theoretical and lack practical elements. Students often lack practical skills and project experience upon graduation, making it difficult for them to adapt to the requirements of the workplace. Therefore, this article proposes a method of reforming traditional e-commerce professional teaching courses through short video teaching. This article first studies and analyzes the problems existing in current practical teaching, such as complex classroom content, large gap between simulated practice and reality, and insufficient practical conditions, and then outlines the meaning and role of micro courses. Therefore, this article explores the integration of the PDCA (Plan Do Check Act) dual cycle into the curriculum, and decomposes and reconstructs the course content according to job requirements. In addition, this article also points out the integration of knowledge in data statistical analysis and psychology into teaching. Finally, this article studies and records students" interactive behaviors, such as video views, likes, and comments, to compare and analyze the effectiveness of teaching reform. The results showed that after the course ended, students" knowledge retention rate and skill transfer effect both improved. Some students showed sustained high levels of interaction, especially in indicators such as viewing frequency and likes. Students with high participation also performed well in the project, with 30 students evaluating the method as "effective". The resource investment cost, which accounted for the largest proportion of classroom education costs after the reform, was only $2500.

1. Introduction

Traditional teaching methods often struggle to cope with the complexity and rapid changes in the industry. The emerging short video teaching method provides new ideas and tools for the teaching reform of e-commerce majors. Short video teaching not only breaks down disciplinary boundaries and enriches course content, but also enhances student engagement and learning outcomes through more intuitive and vivid methods. This article will explore the application of short videos in e-commerce teaching, evaluate their impact on students" learning outcomes, and propose corresponding optimization suggestions, in order to provide empirical support and theoretical guidance for the reform of e-commerce education.

This article first introduces the background and necessity of e-commerce teaching reform, and

then reviews the research results in related fields. Subsequently, this article provides a detailed description of the teaching reform method based on short videos, including the definition of micro courses and the implementation process of teaching. Through experimental data analysis, this article evaluates the effectiveness of short video teaching and discusses its impact on student learning. Finally, this article summarizes the contributions of the research and proposes future research directions and improvement suggestions.

2. Related Works

There is currently a large amount of research literature on education reform plans in different professional fields. Ma X discussed the impact of the "Internet plus Education" model promoted by the National Vocational Education Reform Implementation Plan on vocational education, especially the application of hybrid teaching [1]. Zhong S proposed reform measures from three aspects: teaching content, teaching methods, and teacher team construction, including updating curriculum settings, adopting project-based teaching methods, and strengthening teacher training, in order to cultivate e-commerce talents with innovative consciousness and entrepreneurial ability, and meet the industry's demand for relevant talents[2]. Tran N G adopted a sociological perspective to explore Vietnamese teachers" understanding, awareness, beliefs, and actual implementation of English curriculum reform (i.e. task-based language teaching). The results indicated that teachers have implemented the reformed curriculum in their own way, reflecting a focus on formal methods[3].

Gordon D reviewed the relationship between curriculum and assessment reform and Teacher Self Efficacy (TSE), analyzed 29 empirical studies, and explored the factors influencing TSE and the necessary support mechanisms[4]. Lowell B R conducted a tracking study on the teaching beliefs and self-efficacy of 322 teachers over a period of two years and found that changes in self-efficacy took longer than changes in teaching beliefs. The results indicated that teachers" perceived value and experience of teaching guidance influence their beliefs and self-efficacy [5]. Sturrock S revealed through interviews with 22 teachers their strategies when dealing with conflicts between policy requirements and teaching practices, particularly in terms of accountability and management. The results showed that teachers face challenges of low morale and declining reputation[6]. Campbell S L studied racial and gender biases in the teacher evaluation system of North Carolina and found that although black and white women had similar classroom teaching outcomes, black women scored lower [7].

Simmie G M critically examined how to construct teacher professional learning in an uncertain era, revealed the shortcomings of the current framework through a critical review of relevant literature, and proposed a novel theoretical exposition on TPL (Teacher Professional Learning) [8]. El Hamamsy L proposed an adjusted cascade model for promoting primary school digital education teacher professional development projects within an administrative region. This model relies on in-service teachers, teachers trained by experts, and long-term support, addressing the limitations of traditional cascading models [9]. Miramon S reviewed the evolution of teacher leadership in the Philippine education system, with a focus on analyzing the impact of basic education programs. The results indicated that teachers have transformed from passive executors to active agents of change [10]. Andreasen J K analyzed survey data from two batches of primary and junior high school teachers before and after the reform, and found that pre service teachers have significantly improved their technical teaching knowledge, information and communication technology self-efficacy, and other aspects after the reform [11]. Patfield S discussed the implementation process of teacher career development, with a particular focus on the "Quality Teaching Tour" project implemented in a high school in New South Wales, Australia. He pointed out that

understanding and supporting the implementation process in different school environments was crucial for promoting effective forms of training[12]. Yip J W C found through in-depth interviews with six teachers that the emotional changes brought about by reform are closely related to teachers" self-identity and reform requirements. He proposed a model that describes the interaction between self-identity, performance outcomes, and teacher emotions [13].

Salton Y analyzed the levers of contemporary education policies, particularly in regulating teaching quality through professional standards and supervision. He emphasized the initiative and autonomy of teachers, and suggested that policy frameworks should support and improve teaching quality, rather than simplifying teaching complexity into standardized indicators[14]. Hendawy Al Mahdy Y F analyzed data from 887 teachers in 78 secondary schools to explore the impact of principals" learning oriented leadership on teacher agency, trust, and professional learning. The results indicated that learning oriented leadership had significant direct and indirect effects on teachers" professional learning [15]. The research deficiencies of existing literature mainly lie in the lack of long-term tracking and evaluation of the actual implementation effects of education reform, insufficient consideration of the differences in different educational environments, and insufficient exploration of how to effectively support teachers" practical transformation and continuous improvement of self-efficacy under complex reform conditions.

3. Methods

3.1 Main Problems in the Reform of Practical Teaching of E-Commerce Majors in Universities

(1) The teaching content is complex and difficult to present intuitively

E-commerce involves many aspects, such as commodity trading, payment settlement, logistics and distribution, network technology, marketing, supply chain management, etc. Such complex teaching content, if relying solely on traditional classroom teaching, is difficult for students to have an intuitive understanding and profound comprehension of it. Although multimedia network technology can provide various teaching materials such as images, animations, videos, etc., it is difficult to fully present them due to their abstraction and complexity.

(2) There is a gap between simulated practice and real environment

The teaching of e-commerce courses should focus on both theory and practice. Although multimedia networks can simulate every aspect and scenario in e-commerce, there is still a certain distance between these simulations and reality. In the teaching process, students find it difficult to obtain practical experiences that match the actual situation, which affects their learning efficiency and practical application ability.

(3) The teaching practice conditions are insufficient, lacking a real operational environment

Currently, in undergraduate education in China, the internship conditions for most e-commerce majors are relatively weak, and the corresponding experimental facilities are not perfect enough to meet the practical training needs of this major in the information age. Students majoring in e-commerce need to undergo more practical training to enhance their professional abilities. However, due to universities focusing more on education in other majors, the funding for practical courses in e-commerce is insufficient, which cannot provide sufficient practical teaching conditions for teachers. At present, e-commerce internship bases in universities are only a form, lacking the combination of competition and education. Students cannot apply the knowledge they have learned in this course to reality, which leads to the inability of schools to meet the demand for e-commerce talents in society. At the same time, current practical teaching software in universities can only simulate static scenarios of cross-border e-commerce, and cannot dynamically display changes in market demand, consumer interests, and sales status in the background, which cannot reflect the

real e-commerce environment. In static virtual practice, students may feel that the transactions on e-commerce platforms are only about putting products on and off the shelves, and can also adjust their business strategies through making coupons and other methods. This is also why e-commerce stores cannot operate efficiently.

3.2 Definition and Role of Micro Courses

The so-called micro courses, as the name suggests, are centered around knowledge points, based on the new curriculum standards, and presented to everyone through videos. Users can download videos on mobile phones, computers, and other terminals for learning and watching. Micro courses have the characteristics of "short and micro" and "refined and deep", also known as "micro course videos". The duration of micro classrooms usually varies depending on the teaching content, ranging from 5 minutes to 20 minutes. The videos of microfilms are usually around 5000MB and are usually played in a streaming format.

In micro classroom teaching, what micro courses present to students is no longer a complete knowledge system, but scattered knowledge points. Generally speaking, teachers record microfilms with the podium and classroom as the background, and then use "situational" or "lecture style" teaching methods. The microfilms recorded through this method are closer to the actual teaching context. As micro lessons are fixed, they should have a clear and intuitive goal when recording, highlight the key points of the teaching theme, and ensure the simplicity of the teaching content. The presentation content of micro courses can be demonstrations of practical operations or supplementary activities outside of classroom teaching [16-17].

3.3 Teaching Implementation Process

Integrating the PDCA (Plan Do Check Act) dual cycle into the curriculum, teachers integrate teaching resources and decompose and reconstruct course content according to job requirements.

(1) Based on the characteristics of the product, running through the ideological and political mainline, and accurately plan the script

Script planning prepares and lays the foundation for filming and editing, providing overall ideas and design plans. To produce short videos of agricultural products, it is necessary to explore the selling points of the product and plan the script based on its characteristics. Based on the design of the course content, this study explores the ideological and political elements of the course, and takes "enhancing legal awareness, cultivating professional dedication, inheriting hometown culture, and helping rural revitalization" as the main line of ideological and political education [18].

(2) Preparing basic materials and design comprehensive works based on product requirements

The filming stage is to prepare video materials for short video editing, and to shoot materials that meet the script requirements based on product requirements and design plans. In the editing stage, based on the script, visual marketing design is carried out for agricultural product short videos according to the consumption psychology and browsing habits of the target audience, comprehensively reflecting the highlights of the short videos, increasing user likes, shares, comments, etc., in order to achieve the goal of driving agricultural product sales.

3.4 Curriculum Design and Content Optimization Suggestions

The path of reforming live streaming operation courses is a deep-seated and multi-level issue. Specifically, it is to integrate knowledge of data statistics analysis and psychology into teaching, so that students can have a deeper understanding of the operation of live streaming. This method can break through traditional disciplinary boundaries, allowing students to have a broader knowledge

base and engage in in-depth thinking and problem-solving from multiple levels. In order to ensure the timeliness and dynamism of the course, it is necessary to conduct in-depth research on the rapidly developing live streaming industry, including cutting-edge technologies, business operation models, and relevant laws and regulations. Introducing these elements can provide a forward-looking knowledge foundation for future practitioners. This can not only make the teaching content more vivid, but also enable students to better grasp the trends of industrial development. In terms of course design and content, by leveraging interdisciplinary expertise, we aim to strengthen the coverage of dynamic elements, enabling live streaming operations courses to better adapt to the complex and ever-changing industrial environment. This reform approach aims to provide students with richer and deeper learning experiences, thereby enabling them to have more comprehensive live streaming operation capabilities.

4. Results and Discussion

4.1 Experimental Equipment and Data Collection

In the classroom reform experiment based on short videos, backend data collection is a key step to ensure the evaluation of teaching effectiveness. Firstly, the laboratory is equipped with a high-performance video recording device, including high-definition cameras, professional microphones, and lighting equipment suitable for different lighting environments, to ensure clear and stable video quality. At the same time, data collection software was used in the experiment to record students" interactive behaviors in real-time, such as video views, likes, and comments. These data are aggregated through academic management systems and online education platforms, and processed using big data analysis tools. The configuration of data collection equipment and software ensures the accuracy and comprehensiveness of experimental data, providing a reliable foundation for subsequent data analysis and teaching effectiveness evaluation.

4.2 Experimental Results

4.2.1 Long term effects and skill transfer

Long term effectiveness and skill transfer assessment of students" ability to retain knowledge and apply skills, to confirm the effectiveness of short video teaching and provide data support for future course optimization. Collecting data at four time points, one month, three months, six months, and twelve months after the completion of the course, to assess students" ability to retain and apply the knowledge they have learned. In addition, the transfer effects of skills in related courses, internships, projects, and other fields were evaluated, as shown in Figure 1.
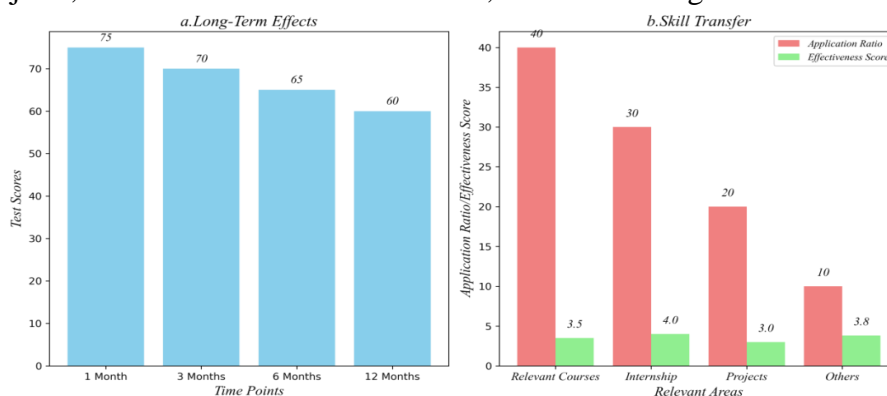

Figure 1: Long term effects and skill transfer

The experimental results indicate that over time, students" exam scores gradually decline, but there is still a significant retention within 6 months (as shown in Figure 1 (a)). The transfer effect of skills varies in different fields, and the application rate of related courses and internships is the highest. The research results highlight the importance of continuous reinforcement and practical application in maintaining long-term learning outcomes, as shown in Figure 1 (b).

4.2.2 Student participation heat map

Analyzing student engagement and identifying differences in engagement can provide a basis for developing personalized teaching strategies to enhance overall engagement and learning outcomes. The specific interactive behavior can be seen from the heatmap in Figure 2.
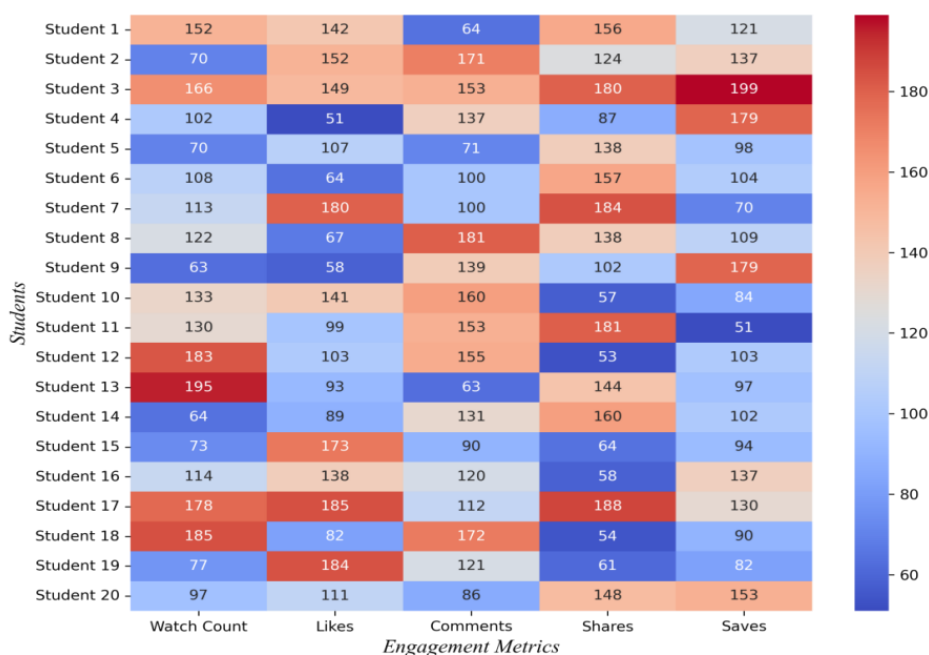

Figure 2: Student engagement heatmap

Some students have shown sustained high levels of interaction, especially in metrics such as views and likes, indicating their active participation. On the contrary, some students show lower engagement on multiple indicators, indicating a lack of interaction with the content. The difference in participation highlights the necessity of personalized intervention to improve overall participation. Students with high participation in all indicators can be used as benchmarks to develop targeted strategies and encourage students with low participation to increase their participation. These research findings suggest that although some students have high levels of interactivity, other students may benefit from differentiated learning strategies or incentives to increase their participation in various indicators, as shown in Figure 2.

4.2.3 Student feedback effect of short video teaching

The experiment collected feedback from students on teaching methods, evaluated satisfaction, and provided reference for curriculum improvement and teaching quality enhancement. The specific results are shown in Figure 3.
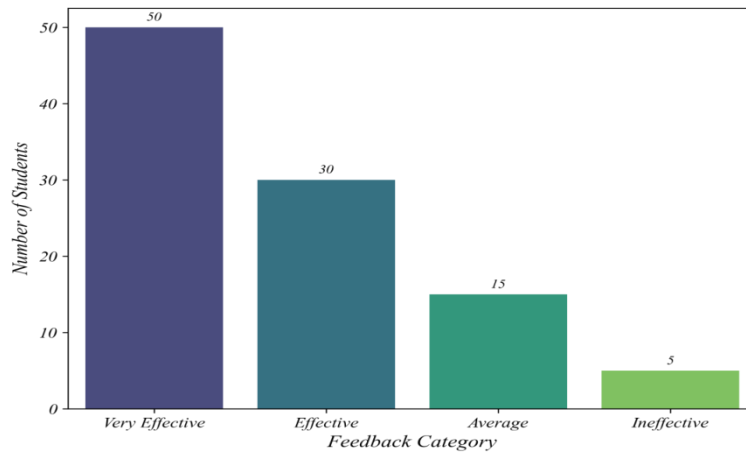
Figure 3: Student feedback effect of short video teaching

This bar chart displays students" feedback on the effectiveness of teaching methods, divided into four categories: "very effective", "effective", "average", and "ineffective". The data shows that the vast majority of students (50 people) consider the method to be "very effective", indicating a high level of satisfaction and identification with the teaching method. Secondly, 30 students rate the method as "effective", while 15 students consider it "average". Only 5 students consider the teaching method "ineffective", reflecting a positive overall feedback and good recognition of the teaching effect, as shown in Figure 3.

4.2.4 Relationship between participation and project performance

Merely analyzing student engagement is not enough. In order to test the effectiveness of classroom reform, the experiment also needs to analyze the relationship between student participation and project performance, in order to promote the improvement of learning outcomes. Therefore, this article will visualize the relationship between participation and project performance, and the results are as follows.
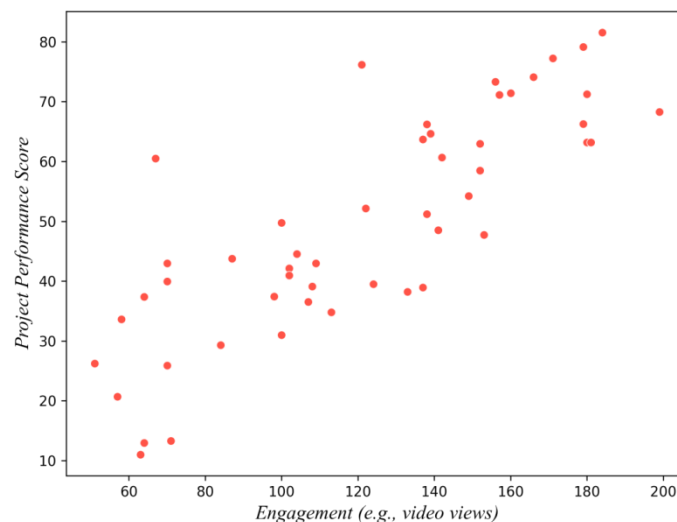

Figure 4: Relationship between participation and project performance

As participation increases, the project performance score shows a certain positive correlation,

and students with high participation usually perform better in the project. Although performance scores fluctuate with increasing participation, the overall trend shows that students with higher participation generally score higher in the project. This indicates that students' enthusiasm for participating in teaching activities has a significant impact on their project performance, and higher participation can effectively improve learning outcomes, as shown in Figure 4.

4.3 Cost of Short Video Classroom Resource Investment

From the above data analysis, it can be seen that short videos can improve e-commerce professional classrooms and break through the bottleneck of traditional classrooms that focus more on theory than practice. However, experimental research still needs to consider the cost of educational reform in order to weigh the pros and cons of the reform. Therefore, the experiment evaluated the costs in different aspects, and the results are shown in Table 1.

Table 1: Resource input costs

Cost Category	Description	Cost Estimate (USD)	Notes
Resource Investment	Time and costs for producing short videos	$2,500	Includes scriptwriting, filming, and editing.
Maintenance	Ongoing updates and revisions to videos	$100	Estimated annual cost for content updates.
Equipment	Cameras, microphones, lighting, etc.	$800	Initial investment for video production equipment.
Training	Training staff to use video production tools	$500	Costs for training sessions and materials.

According to the data in Table 1, the cost of resource investment is $2,500, which mainly covers scriptwriting, filming and editing, and this investment is the basis of video production. In terms of maintenance cost, it is expected to spend US$100 per year for updating and revising the video content to ensure the timeliness and accuracy of the video information. In terms of equipment, an initial investment of $800 was made for equipment such as cameras, microphones and lighting, which are key to ensuring the quality of video production. In addition, in order to upgrade the production skills of staff, training costs amounted to $500, which included the cost of training courses and materials, which helped to increase the proficiency of staff in video production tools.

5. Conclusion

In the information age, e-commerce has become an important component of global economic activities, and the demand for e-commerce talents is increasingly strong, bringing many challenges to the talent cultivation of e-commerce majors in universities. This study conducted an in-depth exploration of the teaching reform of e-commerce major by introducing the short video and PDCA dual cycle teaching mode. The experimental results show that short video teaching significantly improves students' participation and learning effectiveness, while promoting long-term retention of knowledge and effective transfer of skills. These findings indicate that short video teaching not only enhances students' practical skills, but also improves the practicality and interactivity of the course, providing theoretical support and practical experience for the reform of e-commerce courses. However, this study also has some limitations, including a small sample size and short data collection time. Future research should expand the sample size and compare and analyze different teaching methods to further validate the effectiveness and potential applications of short video

teaching. Overall, this study provides innovative methods and valuable experience for the reform of e-commerce education, which has important practical significance and broad application prospects.

Acknowledgement

References

[1] Ma X, Cao B. Research on Online Teaching Reform of E-commerce Courses in the Context of New Liberal Arts[J]. Journal of Education and Educational Research, 2023, 4(3): 5-12.

[2] Zhong S. Exploration of Higher Vocational E-commerce Teaching Reform Guided by Innovation and Entrepreneurship [J]. Contemporary Education and Teaching Research, 2024, 5(5): 163-168.

[3] Tran N G, Ha X V, Tran N H. EFL reformed curriculum in Vietnam: An understanding of teachers' cognitions and classroom practices[J]. RELC Journal, 2023, 54(1): 166-182.

[4] Gordon D, Blundell C, Mills R, et al. Teacher self-efficacy and reform: a systematic literature review[J]. The Australian Educational Researcher, 2023, 50(3): 801-821.

[5] Lowell B R, McNeill K L. Changes in teachers' beliefs: A longitudinal study of science teachers engaging in storyline curriculum-based professional development[J]. Journal of research in science teaching, 2023, 60(7): 1457-1487.

[6] Sturrock S. Primary teachers' experiences of neo-liberal education reform in England: 'Nothing is ever good enough' [J]. Research Papers in Education, 2022, 37(6): 1214-1240.

[7] Campbell S L. Ratings in black and white: A quantcrit examination of race and gender in teacher evaluation reform [J]. Race Ethnicity and Education, 2023, 26(7): 815-833.

[8] Simmie G M. Teacher professional learning: a holistic and cultural endeavour imbued with transformative possibility [J]. Educational review, 2023, 75(5): 916-931.

[9] El-Hamamsy L, Monnier E C, Avry S, et al. An adapted cascade model to scale primary school digital education curricular reforms and teacher professional development programs[J]. Education and Information Technologies, 2024, 29(9): 10391-10436.

[10] Miramon S, Kilag O K, Groenewald E, et al. Teacher leadership in the Philippines: Evaluating its impact on K-12 education reform[J]. International Multidisciplinary Journal of Research for Innovation, Sustainability, and Excellence (IMJRISE), 2024, 1(1): 162-167.

[11] Andreasen J K, Tømte C E, Bergan I, et al. Professional digital competence in initial teacher education: An examination of differences in two cohorts of pre-service teachers[J]. Nordic Journal of Digital Literacy, 2022 (1): 61-74.

[12] Patfield S, Gore J, Harris J. Shifting the focus of research on effective professional development: Insights from a case study of implementation[J]. Journal of Educational change, 2023, 24(2): 345-363.

[13] Yip J W C, Huang J, Teng M F. Identity and emotion of university English teachers during curriculum reform in China [J]. Language, Culture and Curriculum, 2022, 35(4): 421-439.

[14] Salton Y, Riddle S, Baguley M. The 'good'teacher in an era of professional standards: policy frameworks and lived realities [J]. Teachers and Teaching, 2022, 28(1): 51-63.

[15] Hendawy Al-Mahdy Y F, Hallinger P, Emam M, et al. Supporting teacher professional learning in Oman: The effects of principal leadership, teacher trust, and teacher agency[J]. Educational Management Administration & Leadership, 2024, 52(2): 395-416.

[16] Zheng T. Difficulties and Construction Ideas of Applying Industry-Teaching Integration in the Practical Course of Cross-border E-commerce[J]. Curriculum and Teaching Methodology, 2024, 7(6): 58-63.

[17] Wahjusaputri S, Nastiti T I. Implementation of e-Commerce in Improving the Competitiveness of Vocational Secondary Education Student Entrepreneurship Products[J]. Journal of Education and Learning (EduLearn), 2022, 16(3): 384-391.

[18] Amilia F, Nurkamilah N, Rowindi G. Introducing e-commerce to achieve a productive and entrepreneurial village[J]. ABDIMAS: Jurnal Pengabdian Masyarakat, 2022, 5(1): 1922-1926.