



Research on the Application of Artificial Intelligence in the Teaching of Financial Accounting Specialties

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SUMMARY: *Based on the new era, how to apply AI-driven technology to accounting major instruction in higher education institutions has become an urgent problem. According to the four principles of teaching system construction, this paper determines the overall structure and database of the accounting simulation practice instructional management platform, and completes the design of the teaching system with the support of related development software and hardware equipment. Through the teaching system performance test, to verify whether the system can run normally, and then the system formally put into the college financial accounting professional teaching, and set an experimental cohort and a control cohort; on this basis, questionnaires and independent samples t-tests were employed to investigate and evaluate the instructional effectiveness of the system. Under the traditional accounting teaching method, the students' application ability, professional core literacy, learning interest, learning motivation enhancement effect is not significant, and its mean difference is 0.157, 0.176, 0.084, 0.112, while under the role of the teaching system in this paper, the mean difference of the four indexes is 1.047, 1.051, 0.883, 0.944, and it has a significant difference, which shows that this paper system has excellent teaching application value. This study advances the deeper fusion of artificial intelligence with accounting professional education and instruction, thereby nurturing accounting professionals capable of fulfilling the demands of the contemporary era.*

KEYWORDS: *independent sample t-test; artificial intelligence; performance test; financial accounting; teaching management system*

1 Introduction

Financial accounting class mainly involves foundational accounting, mid-level financial accounting, upper-level financial accounting and other professional required courses, professionalism and applicability, the course content and the capital market is closely linked [1, 2]. With the premium-grade advancement of the social economy, the growing need for high-quality, digital financial talents from enterprises and administrative institutions is increasing day by day [3, 4]. As a compulsory course under the discipline of business administration, the teaching of financial accounting will face higher quality requirements, and leveraging artificial intelligence (AI) in instructional settings to drive teaching reform has become an inevitable trend of the times [5, 6].

In the teaching of financial accounting class, AI technology can significantly improve teaching efficiency and reduce the repetitive workload of teachers [7]. In traditional courses, teachers need to spend a lot of time correcting students' bookkeeping vouchers and financial statements assignments, and manual correction is susceptible to subjective factors, resulting in

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<https://doi.org/10.65102/is2026443>

lagging feedback and high error rates [8, 9]. The intelligent correction system under AI can automatically identify errors in students' assignments, such as inappropriate use of subjects and incorrect direction of debit and credit, through predefined accounting standards and accounting rules, and generate a detailed error analysis report, including the types of errors, the basis of relevant guidelines and suggestions for correction [10-13]. In addition, AI can also promote the professional teaching mode of financial accounting from "one-way instillation" to "interactive inquiry", and enhance students' active learning consciousness and practical ability [14, 15]. By leveraging virtual simulation technology, an accounting training environment that is highly consistent with the actual business scenarios of enterprises can be constructed. Students can participate in the entire process from obtaining original vouchers, accounting processing to financial statement preparation as "accountants", and the system will generate business risk warnings and operation guidance in real time based on students' operation behaviors. It effectively makes up for the deficiency of "armchair theorizing" in traditional practical training [16-19].

The application of AI provides technical support for the instructional modernization of financial accounting disciplines in keeping with contemporary development, which effectively improves the learning experience, brings personalized learning, and thus enhances the teaching effect. Literature [20] emphasized the influence of AI on the accounting field drawing on a literature review, indicating that the curriculum reconstruction of the accounting profession is necessary in order to adapt to the teaching challenges brought by AI. Literature [21] analyzed how AI shapes accounting education through a systematic review, and the results underscored the imperative for accounting educators to revise their pedagogical approaches and course content to ensure that students are equipped with the skills necessary to adapt to the AI era. Literature [22] presents the results of a study conducted on an accounting course to evaluate the effectiveness of intelligent online learning and assessment software in the course,

which showed that AI-powered instructional approaches elevated students' exam performance in the financial accounting program. Literature [23] proposed a multimedia-supported dual-channel interactive pedagogical model grounded in AI assistance with the aim of boosting student engagement and deepening learning in the financial accounting program, and the method effectively improved the quality of classroom teaching.

Literature [24] examined students' perceptions of the application of AI in the instruction of finance and accounting subjects and gathered responses from current enrollees and alumni of the program at a university, and the results pointed out that they recognized the significance of technological transformation. Literature [25] examined the applicability of educational games based on AI technology in facilitating transformative learning in an accounting course and showed that educational games with AI were able to simulate realizable business situations, effectively promoting student engagement and learning outcomes in the course. Literature [26] investigated the path of instructional reform for finance and accounting disciplines under AI, examining reform pathways across four dimensions: teaching content, mode, practice and course assessment, through an analysis of the prevailing conditions of professional courses and the emerging challenges confronting instruction. Literature [27] examines the influence of AI on the accounting sector, assesses the current state of accounting talent development models in higher education institutions, the hurdles of talent cultivation, and advances an AI-grounded innovative accounting talent development framework.

In addition, literature [28] examined the effect of AI-driven programs on enhancing financial reporting competencies among accounting students, and demonstrated through comparative experiments that deploying AI programs can substantially elevate students' financial reporting skills. Literature [29] emphasized the considerable worth of AI technology

in the cross-disciplinary instruction of accounting, which is important for cultivating students' comprehensive professional competence, innovating accounting education and teaching models, and accelerating the upgrading and reconstruction of the accounting discipline. Literature [30] analyzes the deployment and transformative potential of AI-generated content technology in accounting education, demonstrating that it improves the quality and efficiency of teaching and learning by generating educational content and providing personalized and dynamic learning experiences. Literature [31] explored the application of virtual simulation and AI in modular learning of accounting and finance modules, highlighting the capacity of virtual simulation and AI to develop modular, adaptable and learner-centred frameworks in accounting education through comparative experiments in vocational institutions. Literature [32] proposes an AI-based mobile application aimed at transforming accounting education, which is able to provide intelligent tutoring, personalized learning paths, and interesting educational videos based on each student's learning speed and knowledge level, which elevates the standard of instruction and learning outcomes. Literature [33] describes the use of AI tools in financial education and examines students' perceptions, affective responses, and instructors' experiences, and a study of quantitative data shows that learners regard AI tools as indispensable for enriching their learning experience. Literature [34] takes an accounting course as a case study and outlines the implementation pathway of "intelligent collection, intelligent recognition, intelligent presentation and intelligent assessment" from an AI technology standpoint, with the goal of achieving the organic integration of AI, while also surfacing the challenges of data security and technological dependence in the reform process. Literature [35] evaluated the ability of ChatGPT 3.5 and 4 models in solving seven educational accounting scenarios, and found that ChatGPT performs well for tasks that require interpretation, rule application, and ethical assessment using a framework.

Aiming at the cultivation of corporate financial accounting professionals against the backdrop of artificial intelligence, this paper puts forward a set of accounting simulation practice instructional management platform tailored for students in higher education institutions guided by the principles of ease of use, high reliability, security, easy maintenance, and openness, and examines whether the system is able to operate and use normally through performance testing. After the system passes the performance test, the system is formally introduced into the accounting instructional environment in colleges and universities, 23 accounting students are selected as the research subjects, and the research subjects are divided into an experimental group and a control group, with questionnaires and independent samples t-tests deployed to conduct investigative analysis of the system's instructional effectiveness, aiming at confirming the validity of this paper's research program.

2 Teaching System Construction and Testing for Financial Accounting Classes

To establish a set of accounting experimental teaching system suitable for use in the university, according to the requirements of the syllabus of the Department of Economics and Management for the accounting professional courses and the practical teaching syllabus, to integrate and integrate the teaching management of the college's accounting simulation practice by using artificial intelligence technology and computer software technology, and to gradually complete the design of the teaching management system of the accounting simulation practice by means of the analysis and integration of the business processes, so as to further improve the accounting Practice teaching level to provide a basic support platform.

2.1 Principles of construction

2.1.1 Principle of accessibility

Accounting Practice Simulation Teaching Management System integrates ASP.NET technology, AJAX technology, HTML, Javascript scripting language and other high technologies. The practicality, security, stability and advancement of the selected technology are considered in the selection of related technologies. In the design of system functions, we should give full consideration to the user's simplicity, flexibility and ease of use, to provide users with easy to accept the operation, flexible and beautiful friendly interface.

2.1.2 High reliability and security

Since this system is applied to campus network and the main users are school students and lecturers, the security and reliability of the whole system is particularly important, and centralized control and management is carried out in all aspects of the server infrastructure, network communication devices, user endpoint equipment, scanned data, and database framework. It not only ensures the security and integrity of the whole system, but also guarantees the continuity and reliability of the operational integrity of the database framework, the server infrastructure, and the user-side network system.

2.1.3 Ease of maintenance

As this system is mainly oriented to the practical teaching of accounting, the user is the university students and lecturers, in the event of failure must be easy to eliminate, can not affect the entire teaching work. For day-to-day management should also be simple to operate, easy maintenance, in short, easy maintenance is the simulation teaching system in the practical application of the success of the key.

2.1.4 Openness

In order to realize the sharing of data resources, the system should be functionally expandable, to leave a standard data interface, in order to achieve seamless docking with the school's existing and possible future information application systems, in order to ensure that the school's prior investment in experimental equipment, software can be maximized to continue to use, so this simulation system must have a good openness.

2.2 Overall system structure and database design

2.2.1 Overall system architecture design

The overall architecture of the accounting practice simulation teaching management system is shown in Figure 1 and described as follows.

(1) Front-end representation layer: the front-end representation layer through the portal technology, through the browser users can realize the interactive access to the business logic interface, to realize the user's operation data flow input, output, and will be updated to display the experimental data, to provide users with access to the teaching management system of accounting practice, the user, including teachers, program administrators, students are through the browser access to the application site to obtain the relevant business functions.

(2) Business Application Layer: It is provided to the front-end site to call and complete the actual business related to the accounting experiment teaching management, including practice-based information management, simulation practice teaching management, teaching course management, comprehensive information query, system management, and the related business

functions are designed on this basis.

(3) Application support layer: some management modules in the background of the system, including user management, report printing and permission management.

(4) Software Platform Layer: Provide hardware and software support required for the operation of the whole system, including operating system, database system, system firewall, to ensure the support of the operation of the whole application system and the safe access to the database system.

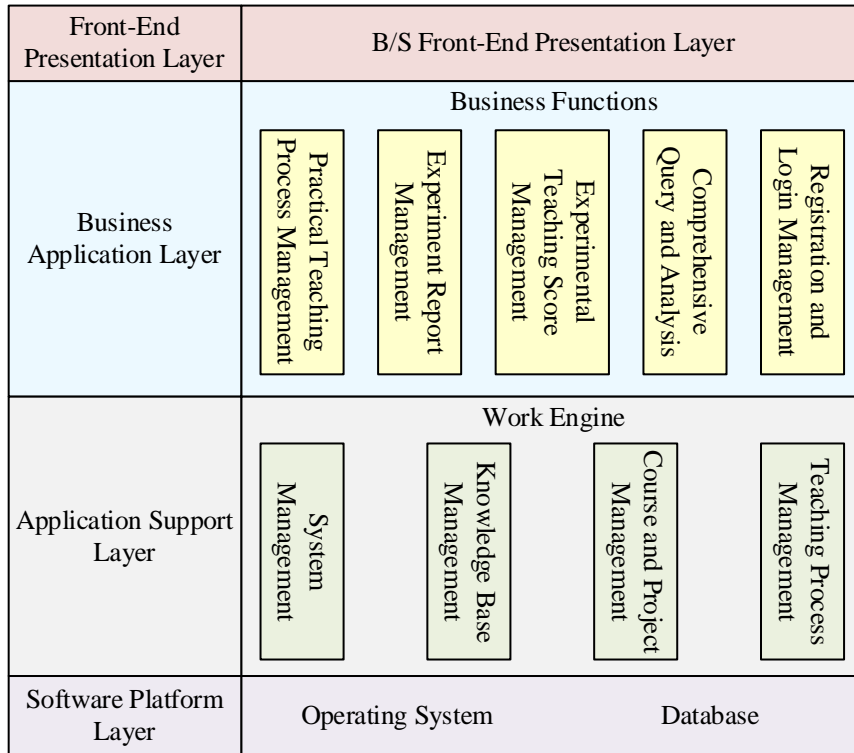


Figure 1: Overall system architecture

2.2.2 Database design

The security mechanism of the database system is shown in Figure 2, this system is designed using the B/S model, thousands of browser clients within the campus can access the accounting simulation practice teaching system, the data are facing security threats, in this system such as the accounting knowledge base, the accounting course assessment knowledge base and other important data, once the data leakage, alteration, loss, will be a serious consequence for the teaching of accounting practice management system in our institution. Database security mechanism is used to achieve a variety of database security policy function set, it is by these security mechanisms to realize the security model, and then realize the goal of protecting the security of the database system.

In this Accounting Simulation Practice Teaching System, a large number of our school's accounting examination question banks will be saved in the future, and if the data leaks out, it will have a serious impact on the fairness of our school's accounting examination. The data is stored in the database server, these important data must be encrypted through the library, because the data is encrypted, in case of hackers illegally invade the database system, the system through the library encryption can form a second encryption of the data to maximize the protection of data security. Intra-database encryption implements encryption in the kernel layer of DBMS, the strength of this approach lies in its robust encryption capability, with the

encryption module embedded directly within the DBMS functionality, thereby enabling tight and seamless integration between the encryption mechanism and DBMS.

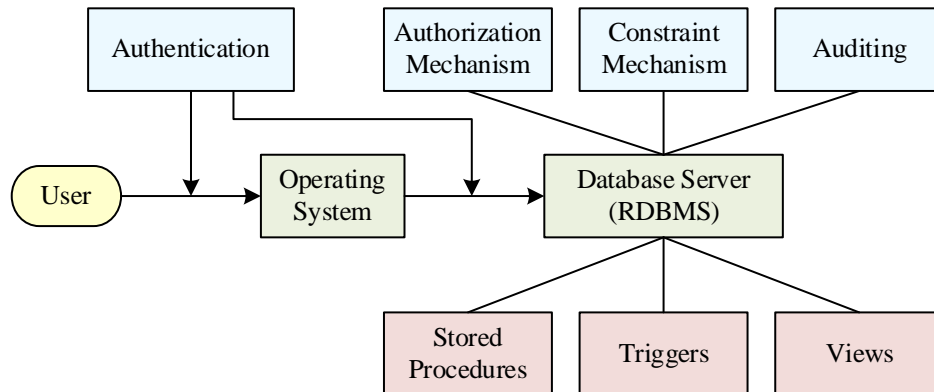


Figure 2: The security mechanism of the database system

2.3 System Test Analysis

In the test environment, the system's concurrent login performance testing, through the number of concurrent logins 200 users, 500 users, 1000 users to analyze the system's concurrent login response time and its client and server CPU, memory usage, in order to test whether the system can meet the needs of users.

2.3.1 Setting the scene

The design scenario is 200, 5000 users concurrently, 10 virtual users are initialized every 8 seconds before running, and 10 Vuser are started every 10 seconds.

The design scenario is 1000 concurrent users, 10 virtual users are initialized every 10 seconds before running, and 10 Vusers are started every 10 seconds.

2.3.2 Test content

Using the performance monitoring tool, the CPU usage, average response time, number of transactions passed per second, and number of hits per second of the application and database servers are examined, and the detailed description of the performance parameters is presented in Table 1. Transaction average response time, the average time used to run the transaction execution, the number of transactions passed per second, showing the number of each transaction passed, failed and stopped per second in the scenario running. Clicks per second, the number of HTTP requests submitted to the web server by the virtual user per second during the running of the scenario.

Table 1: Performance parameter description

Monitoring parameters	Performance parameters	Explanation
Memory	% Committed Bytes in Use	It refers to Memory Committed Bytes and Memory Commit Limit The percentage value between them. For example, 40 indicates that the ratio between them is 40%
	Available MBytes	It refers to the amount of available physical memory. When this value is less than 4MB, it indicates that the computer's memory is insufficient. This value is best guaranteed to be within 10% of the physical memory value
	Page Faults/sec	It refers to the number of "page errors" in the processor. The lower this value is, the better. If it is occasionally high, it indicates that there is competition among threads. If a high value is continuously saved, it suggests that there might be a memory bottleneck during processing
	Pages/sec	It refers to the sum of the counter values of page input/second and page output/second.
Network	Bytes Total/sec	It refers to the rate at which the server sends and receives data. It is recommended that this value does not exceed 50%.
	Packets/sec	It refers to the rate at which a network sends and receives data packets. This value has no valve value and needs to be determined in combination with Bytes Total/sec
Disk	Avg. Disk Queue Length	It refers to the mean count of pending system requests awaiting disk access
	Instantaneous Disk Queue Length	It refers to the real-time disk queue length, which is the non-average value of the time length.
	Disk Read Bytes/sec	It refers to the speed of disk reading
	Disk Write Bytes/sec	It refers to the speed of disk writing
Processor	% Processor Time	It refers to the usage of the processor and the proportion it occupies
	% User Time	It refers to the proportion of processor time consumed during active user operations under the current user situation
Infrastructure	Processor Queue Length	It refers to the number of threads in the processing queue

2.3.3 Test results

(1) Concurrent 200-user system login

When concurrent 200 users perform system login system resource situation is shown in Table 2, when concurrent 200 users perform login, the system's resource utilization is analyzed.

a) The physical residual amount of the server system does not fall below 4M, which indicates that there is enough memory, and the number of missing pages per second continues to be stable, which indicates that there is no memory bottleneck in the system.

b) When performing concurrent logins, the average transaction response time is around 2.434 seconds, and the number of system concurrent login transactions passed is 200, with a pass rate of 100%, which meets the system performance targets.

c) The average read rate and write rate of the disk are 9829.026 and 42528.254 respectively. The larger the disk rate is, the stronger the ability of the system to process transactions and the more reasonable the utilization of resources.

Table 2: Concurrent 200 users execute system logins

Performance parameters		Min	Mean	Max
Memory	% Committed Bytes In Use	42.926	42.951	44.014
	Available MBytes	924	945.548	945
	Page Faults/sec	11.833	61.616	421.456
	Pages/sec	0	2.434	84.666
Disk	Avg. Disk Queue Length	0	0.006	0.208
	Current Disk Queue Length	0	0	0
	Disk Read Bytes/sec	0	9829.026	198226.233
	Disk Write Bytes/sec	0	42528.254	1231142.26
Processor	% Processor Time	0	5.059	81.338
	% User Time	0	3.359	77.42
System	Processor Queue Length	0	0.539	72

(2) Concurrent 500-user system login

In the concurrent 500 users and perform the login, the system resource utilization analysis, concurrent 500 users to perform the system login system resources as shown in Table 3.

a) The physical residual amount of the server system does not fall below 4M, which indicates that there is enough memory, and the number of missing pages per second continues to be stable, which indicates that there is no memory bottleneck in the system.

b) When executing concurrent logins, the average transaction response time is around 4.088 seconds, and the number of system concurrent login transactions passed is 500, with a pass rate of 100%, which meets the system performance targets.

c) The average processor usage percentage is 8.31%, while the average processor user percentage is 7.159%, indicating that the system is highly efficient in processing the number of user requests, and also indicating that the network is smooth and fast.

Table 3: Concurrent 500 users execute system logins

Performance parameters		Min	Mean	Max
Memory	% Committed Bytes In Use	41.931	42.459	42.526
	Available MBytes	1016	1019.248	1021
	Page Faults/sec	11.666	72.185	2716.131
	Pages/sec	0	4.088	621.876
Disk	Avg. Disk Queue Length	0	0.018	0.819
	Current Disk Queue Length	0	0.021	1
	Disk Read Bytes/sec	0	16815.434	2622141.014
	Disk Write Bytes/sec	0	33728.069	1001475.026
Processor	% Processor Time	0	8.31	85.013
	% User Time	0	7.159	84.318
System	Processor Queue Length	0	0.438	24

(3) Concurrent 1000-user system login

The resource utilization of the system is analyzed when performing user 1000 user execution logins, and concurrent 1000 user concurrent execution system logins are shown in

Table 4.

a) The physical residual amount of the server system is not lower than 4M indicating that there is enough memory, and its average value is 41.866, and the number of missing pages per second continues to be stable, indicating that there is no memory bottleneck in the system.

b) When performing concurrent logins, the average transaction response time is 2.055, and the number of system concurrent login transactions passed is 1,000, with a pass rate of 100%, which meets the system performance targets.

c) The average value of processor queue length is 0.168, indicating that the system is generally efficient in processing the number of user requests, mainly because of the large number of concurrent users and insufficient bandwidth.

Table 4: Concurrently execute system logins for 1000 users

Performance parameters		Min	Mean	Max
Memory	% Committed Bytes In Use	40.839	41.866	42.936
	Available MBytes	958	1018.807	1057
	Page Faults/sec	2.333	81.601	23438.485
	Pages/sec	0	2.055	516.992
Disk	Avg. Disk Queue Length	0	0.06	1.118
	Current Disk Queue Length	0	0.012	6
	Disk Read Bytes/sec	0	10225.442	2157133.337
	Disk Write Bytes/sec	0	20123.638	1401620.038
Processor	% Processor Time	0	5.104	97.424
	% User Time	0	3.919	88.401
System	Processor Queue Length	0	0.168	24

3 The system's pedagogical application effect exploration program

3.1 Exploratory Program Design

3.1.1 Purpose of the study

The accounting practice simulation teaching management system takes the student-centered teaching concept as the starting point, and the experimental objective of this study is to validate the instructional effectiveness of the accounting practice simulation teaching management system through classroom practice.

3.1.2 Research conjectures

Drawing on the foregoing research objectives, three research conjectures are proposed as follows:

Hypothesis 1: Compared with traditional teaching methods, the accounting practice simulation teaching management system demonstrably enhances students' comprehensive application ability.

Hypothesis 2: Relative to conventional instructional approaches, the accounting practice simulation teaching management system yields a pronounced positive effect on the development of students' professional core literacy.

Hypothesis 3: Relative to conventional instructional approaches, the accounting practice simulation teaching management system yields a notable impact on students' learning interest

and motivation.

3.1.3 Objects of study

The participants in this experiment are 23rd-year accounting majors from a university. Students enrolled in Accounting Class A serve as the experimental group, comprising 40 individuals in total, while 40 students from Accounting Class B of the same cohort are designated as the control group. Prior to the experiment, no substantial disparities were observed between the experimental group and the control group regarding students' baseline conditions, indicating that all participants shared a comparable foundation in accounting software learning, and the selected subjects demonstrate a reasonable degree of representativeness and homogeneity.

3.1.4 Experimental variables

The predictor variables examined in this study encompass conventional instructional approaches, the accounting practice simulation teaching management system, and the dependent variables are the overall effects of teaching, such as the ability to apply accounting software in a comprehensive manner, professional core literacy, learning interest, and motivation.

3.1.5 Data acquisition

The data of this research was obtained by using questionnaires, so as to make a qualitative and quantitative scientific evaluation of the experimental subjects.

(1) Pre-intervention questionnaire survey

At the beginning of the practice, in order to understand the current situation of accounting teaching, a questionnaire survey was carried out from four aspects: comprehensive application ability of accounting software, professional core literacy, learning interest, learning motivation, and the scale in the questionnaire consisted of 20 items, of which, questions 1-5 were used to understand the comprehensive application ability of accounting software, questions 6-10 were used to understand the students' professional core literacy, questions 11-15 were used to understand the students' learning interest, and questions 16-20 were used to understand the students' learning motivation, and questions 16-15 were used to understand the students' learning motivation. 20 questions are used to understand the students' learning motivation, and the scale is a five-point Likert scale, in which ratings of 1, 2, 3, 4, and 5 correspond to the five response categories of unsatisfactory, less satisfactory, generally satisfactory, satisfactory, and very satisfactory in the question items, respectively.

(2) Post-intervention questionnaire

After a semester of classroom practice, in order to further understand the accounting teaching situation at higher education institutions and the shifts introduced by the practice, a follow-up questionnaire survey was administered to the experimental participants, with the aim of substantiating the actual teaching effect of the accounting practice simulation teaching management system.

3.1.6 Independent samples t-test

The independent-samples t-test is employed to examine whether independent samples originate from populations sharing an identical mean, that is, to determine whether the means of independent normal populations are equivalent. This procedure represents a hypothesis test based on the t-distribution, specifically used to compare the means of different data to see whether the difference between them is a random difference or an essential difference. The t-test for independent samples constitutes a test of significance, most commonly used to test

whether two means are significantly different.

The independent sample mean test assumes that the independent aggregate distributions follow normal distributions $N = (\mu_1, \sigma_1^2)$ and $N = (\mu_2, \sigma_2^2)$ where σ_1^2 and σ_2^2 represent the variances of the two aggregates, respectively.

When the null hypothesis holds, the mean comparison of two independent samples employs the t statistic. The t statistic for two independent samples is selected and examined under two distinct scenarios.

The t test statistic is derived when the two population variances are unspecified yet assumed to be equal, i.e. $\sigma_1^2 = \sigma_2^2$:

$$t = \frac{\bar{X}_1 - \bar{X}_2 - (\mu_1 - \mu_2)}{S_v \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \quad (1)$$

where n_1 and n_2 are the two-sample capacities, respectively; S_1 and S_2 represent the two-sample standard deviations, respectively, and:

$$S_v^2 = \frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2} \quad (2)$$

and the statistic follows a t distribution with $n_1 + n_2 - 2$ degrees of freedom.

When the two population variances are unspecified and unequal, i.e., $\sigma_1^2 \neq \sigma_2^2$, the derived t test statistic is:

$$t = \frac{\bar{X}_1 - \bar{X}_2 - (\mu_1 - \mu_2)}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}} \quad (3)$$

This statistic conforms to a t distribution with adjusted degrees of freedom:

$$df = \frac{\left(\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}\right)^2}{\frac{\left(\frac{S_1^2}{n_1}\right)^2}{n_1} + \frac{\left(\frac{S_2^2}{n_2}\right)^2}{n_2}} \quad (4)$$

In statistical analysis, if the variances of two aggregates are identical, they are said to satisfy variance homogeneity, and the Levene F test of variance homogeneity can be applied to examine whether a significant difference exists in the variances of the two aggregates.

To perform the Levene F variance homogeneity test, the null hypothesis $H_0 : \sigma_1^2 = \sigma_2^2$ is put forward, and when carrying out the test procedure, if the probability p value falls below the prescribed level of significance, the null hypothesis H_0 is dismissed, and the variances of the two aggregates are deemed unequal; otherwise, the two aggregates are regarded as having

no significant difference in variance. The formula for calculating the value of the F statistic in the F test is:

$$F = \frac{\max(S_1^2, S_2^2)}{\min(S_1^2, S_2^2)} \sim F(n_1 - 1, n_2 - 1) \quad (5)$$

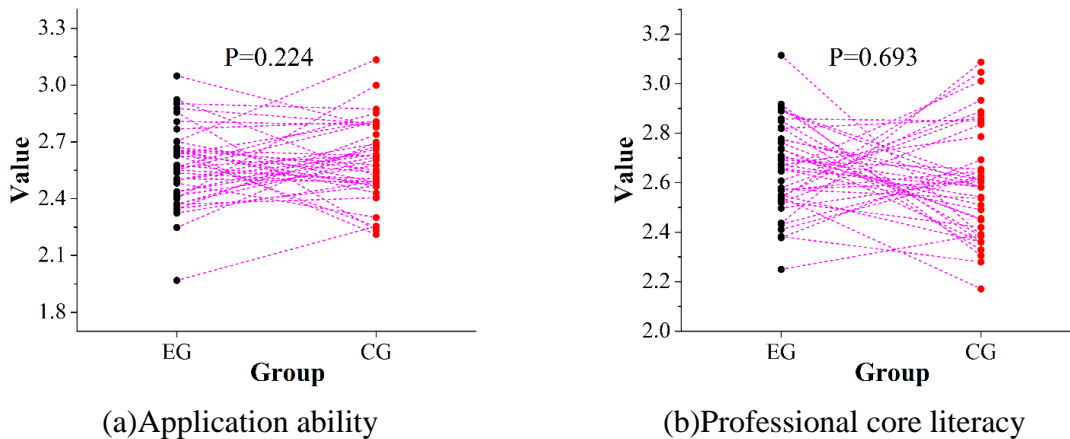
where $n_1 - 1$ and $n_2 - 1$ is the degrees of freedom of $\max(S_1^2, S_2^2)$ and $\min(S_1^2, S_2^2)$.

Under the null hypothesis, the test value 0 is substituted into the $\mu_1 - \mu_2$ component of the t statistic to derive the observed value of the test statistic along with the probability p value computed from the cumulative distribution function of the t distribution. When the probability p value of the test statistic falls below the significance level, the null hypothesis is rejected and the overall mean is determined to differ significantly from μ_0 . If the probability value of the test statistic is below the prescribed level of significance, the null hypothesis is rejected and the population mean is determined to differ substantially from that of the other group.

3.2 Data analysis

3.2.1 Comparative analysis of experimental and control groups before intervention

This subsection explores a pre-intervention comparative examination of the experimental cohort and the control cohort across four dimensions, namely application ability, vocational core literacy, learning interest, and learning motivation. The outcomes of this pre-intervention comparison between the two student groups are presented in Fig. 3, where panels (a) through (d) correspond to application ability, vocational core literacy, learning interest, and learning motivation, respectively, with EG and CG in the figure referring to the experimental and control groups, respectively. According to the pre-test data examination of application ability, vocational core literacy, learning interest and learning motivation, the evidence demonstrates that no meaningful difference exists between the experimental group and the control group at baseline across the four dimensions of application ability, vocational core literacy, learning interest and learning motivation, and their p-values are 0.224, 0.693, 0.182, 0.113, i.e., it means that the students of Accounting Class A and B of the 23rd class before the intervention The values of the indicators are at the same level, which lays a good foundation for the subsequent research.



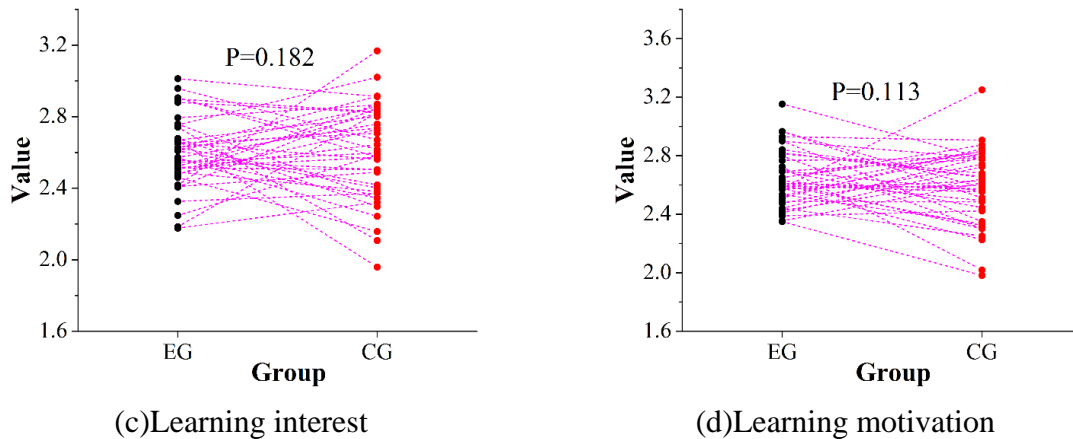
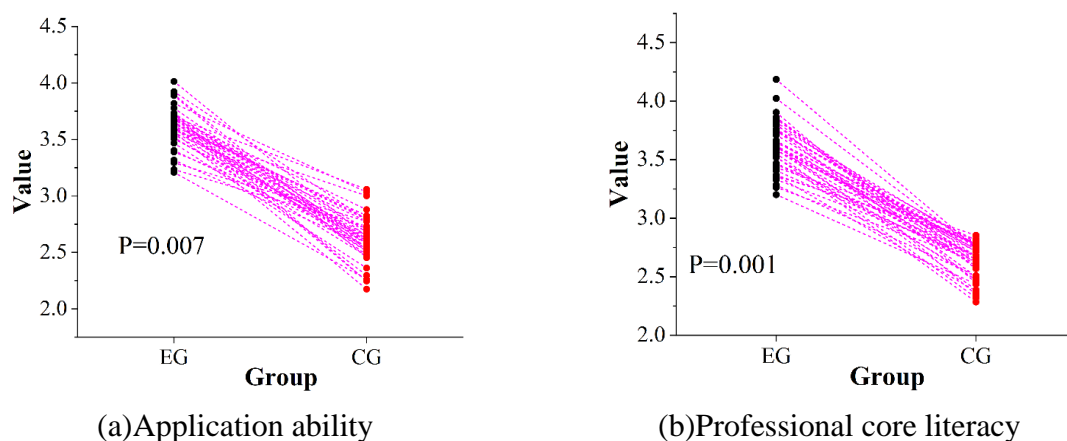


Figure 3: Compare and analyze the results before the intervention

3.2.2 Post-intervention comparative examination of experimental and control groups

Next, through the post-intervention comparison analysis between the experimental cohort and the control cohort, with the aim of validating the instructional effectiveness of this paper's system in the teaching process of accounting majors, the findings of the post-intervention comparative examination between the experimental group and the control group are illustrated in Figure 4. Based on the dots and dashed lines in the figure, it can be seen that there are significant differences between the experimental group and the control group in the application ability, professional core literacy, academic interest and learning motivation of the students, and the corresponding P-values are 0.007, 0.001, 0.003, 0.005, which means that in contrast to the traditional teaching methods, this paper's system is particularly obvious for the students in the application ability, professional core literacy, academic interest and learning enthusiasm of the students, with the corresponding P-values being 0.007, 0.001, 0.003, 0.005, which means that in contrast to the traditional teaching methods, this paper's system is particularly obvious for the students in the application ability, professional core literacy, learning interest and learning motivation to enhance the effect of the system. For example, during the practical instructional process of accounting majors, via the pedagogical platform of this paper, push the knowledge application areas such as video introduction of related topics to increase the affinity of the learning theme, so that students have a perceptual understanding and experience in advance, and then improve the students' application ability, professional core literacy, and learning motivation. Students' application ability, professional core literacy, learning interest and learning motivation.



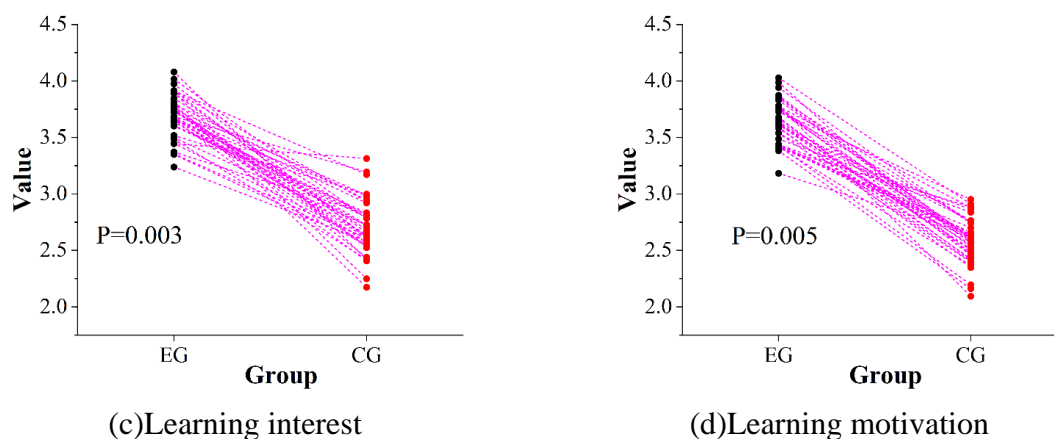


Figure 4: The results of the comparative analysis after the intervention

3.2.3 Before-and-after intervention comparative examination of the control group

Survey data were collected via questionnaire to serve as the comparative basis for this study, upon which the independent sample t-test was employed to conduct a before-and-after comparison of the control group, and the outcomes of the independent sample t-test are presented in Table 5. Upon reviewing the tabulated data, it is evident that following a period of teaching intervention, the students in the control group exhibited limited gains in the improvement of occupational core literacy, academic interest and learning enthusiasm, and the difference of their mean values was 0.157, 0.176, 0.084, 0.112, with the corresponding P-values standing at 0.118, 0.101, 0.114, 0.109, which indicates that the instructional efficacy of conventional teaching approaches in the practical pedagogical context of accounting majors is not outstanding, for example, traditional teaching methods rely on textbook explanations, and do not incorporate new teaching cases into the teaching methods, consequently resulting in students' learning enthusiasm failing to be adequately activated, leading to an insufficient level of corresponding learning drive.

Table 5: Independent-samples t-test outcomes

Name	N	Before		After		P-Value
		Mean	SD	Mean	SD	
Application ability	40	2.557	0.223	2.714	0.229	0.118
Professional core literacy	40	2.543	0.253	2.719	0.212	0.101
Learning interest	40	2.683	0.202	2.767	0.254	0.114
Learning motivation	40	2.559	0.272	2.671	0.223	0.109

3.2.4 Before-and-after intervention comparative examination of the experimental group

Adopting the same method described above, a comparative analysis of the experimental cohort prior to and following the intervention was performed, and the findings of the examination of discrepancies within the experimental group before and after the intervention are displayed in Table 6. Under the teaching intervention of the teaching system in this paper, it is found that the experimental group students' improvement in application ability, professional core literacy, learning interest and learning motivation is particularly significant, with the mean difference of 1.047, 1.051, 0.883, 0.944, and the corresponding P-value of 0.009, 0.005, 0.003, 0.004, which indicates that this paper's system has a very prominent effect on the improvement of the students' ability in application, professional core literacy, learning interest and learning motivation in the actual teaching activities of financial accounting. core literacy, learning

interest, learning motivation enhancement effect is very prominent, in the actual financial accounting teaching activities, through this paper's teaching system allows students to complete their own pre-study and review, consciously discover knowledge about accounting and artificial intelligence and other fields, so as to enhance their need for wisdom education, and to realize the comprehensive training of economic and management accounting talents.

Table 6: Results of difference analysis

Name	N	Before		After		P-Value
		Mean	SD	Mean	SD	
Application ability	40	2.624	0.201	3.671	0.227	0.009
Professional core literacy	40	2.701	0.242	3.752	0.248	0.005
Learning interest	40	2.734	0.226	3.617	0.255	0.003
Learning motivation	40	2.768	0.259	3.712	0.201	0.004

4 Conclusion

In the past, the traditional teaching methods of accounting profession can no longer remain aligned with contemporary developmental trends, so it is necessary to introduce cutting-edge technologies including big data and artificial intelligence into the instructional domain of accounting profession. In this paper, with the technical support of artificial intelligence, we design the accounting practice simulation teaching management system, and validate the viability of the research program in this paper through the two aspects of performance testing and teaching application effect.

(1) In the concurrency number of 200, 500, 1000, the physical residual amount of the server system is not less than 4M, and all of them are kept above 40M, which indicates that the system in this paper does not have memory bottleneck, and it can bring users a pleasant experience, so as to make the system better serve the teaching of financial accounting majors at higher education institutions.

(2) Under the influence of conventional accounting instructional approaches, the effect of students' application ability, professional core literacy, learning interest, and learning motivation enhancement is not obvious, with a mean difference of 0.157, 0.176, 0.084, and 0.112, with the associated P-values of 0.118, 0.101, 0.114, and 0.109. When switched to the teaching system of this paper, it was found that the experimental group students demonstrated remarkably notable gains in application ability, vocational core literacy, learning interest, and learning motivation, with the mean difference of 1.047, 1.051, 0.883, and 0.944, with the associated p-values of 0.009, 0.005, 0.003, and 0.004, which fully proves the actual teaching effect of the system of this paper.

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