

Research on the Cultivation of Independent Learning and Innovative Abilities of Accounting Majors under the Background of Artificial Intelligence

Limin Lu*

Harbin University of Commerce, Harbin 150028, Heilongjiang, China

*Corresponding author: Limin Lu, 102774@hrbcu.edu.cn

Copyright: © 2026 Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), permitting distribution and reproduction in any medium, provided the original work is cited.

Abstract: In the artificial intelligence era, traditional accounting tasks are gradually being replaced by intelligent tools, and complex demands such as management decision-making, analysis, and the integration of business and finance have become the development direction of the accounting industry. Self-directed learning ability and innovation ability are key competencies for accounting students to adapt to industry development. This study systematically elaborates on the significance of cultivating self-directed learning and innovation abilities in accounting students, explores the internal relationship connection between the two capacities, sorts out the existing problems in the current cultivation, and proposes targeted and feasible cultivation paths. The research aims to provide a theoretical foundation and practical references for the teaching reform of the accounting major.

Keywords: Artificial intelligence; Accounting students; Self-directed learning; Innovation ability

Online publication: August 31, 2026

1. Significance of cultivating independent learning ability and innovative capacity for undergraduates majoring in accounting

1.1. An inevitable requirement to adapt to the intelligent development of the accounting industry

With the widespread adoption of artificial intelligence technologies, the extensive use of financial robots, intelligent audit systems, and automated accounting platforms is rapidly replacing repetitive and standardized basic accounting tasks, such as bookkeeping, expense reimbursement, and voucher verification ^[1-2]. The talent demand structure of the accounting industry has undergone fundamental changes, transitioning from traditional skill-oriented personnel to modern strategic value-creating professionals. Contemporary

accounting practitioners are now required to engage in high-value-added and complex tasks, including risk management, integrated industry-finance analysis, and group financial control ^[3-4]. Without a strong awareness of independent learning and innovative thinking, accounting undergraduates may struggle to adapt to dynamic post-adjustment and career transitions, thereby failing to meet the industry's development demands in the era of intelligent finance.

1.2. The key path to break through the limitations of traditional accounting education

In the context of the rapid development of intelligent finance, accounting education is facing new challenges. Due to the limitation of classroom hours, the teaching content is not closely connected with the development of industry practice and intelligent finance. The practical teaching system still needs to be improved. The traditional training mode that emphasizes theoretical teaching still continues, and the talent training mode is temporarily difficult to fully adapt to the development needs of compound accounting talents in the new era ^[5-6]. The cultivation of independent learning and innovation ability is the core of breaking through the limitations of traditional education. Autonomous learning ability can effectively make up for the deficiency of classroom teaching, break the limitation of time and space, and make students become the main body of learning. The cultivation of innovative ability feeds back the transformation and upgrading of teaching mode. Through scene teaching methods such as sand table simulation, school-enterprise cooperation projects, scientific research and innovation training, colleges and universities enable students to exercise innovative thinking in practice, thus promoting colleges and universities to change traditional teaching methods.

1.3. Core support for shaping students' competitiveness and career development

Self-directed learning and innovative capabilities constitute the core competitiveness for accounting majors to thrive in the workplace and achieve long-term career growth, as well as vital drivers of career potential. As the foundation of lifelong learning, self-directed learning enables students to quickly adapt to job requirements at the early career stage, master practical operations of financial software proficiently, and independently supplement knowledge and upgrade competencies in response to career development needs, facilitating smooth transitions from entry-level accounting roles to mid-to-senior positions such as management accountants, financial analysts, and finance supervisors. Innovative capabilities, by contrast, directly determine whether graduates can stand out as elite accounting professionals amid homogeneous workplace competition. The integration of self-directed learning and innovative skills effectively strengthens students' critical thinking, logical analysis, and interdisciplinary integration capabilities. Equipped with core accounting expertise alongside interdisciplinary literacy covering information technology, corporate management, and strategic planning, students gain an edge in the job market and lay a solid foundation for career advancement.

1.4. The internal driving force for the self-development of accounting discipline

As a highly applied discipline, accounting witnesses constant mutual nourishment and promotion between its theoretical advancement and social practical innovation. The intelligent transformation of the accounting industry expands the connotation and denotation of the accounting discipline continuously. The cultivation of accounting majors' autonomous learning and innovative capacity serves as the internal driving force for the self-development of the accounting discipline. Cultivating students' innovative capacity enables them

to conduct forward-looking and exploratory academic thinking, which provides brand-new ideas for the theoretical research of the accounting discipline. Against the backdrop of artificial intelligence, accounting majors integrate cutting-edge technologies with the accounting discipline on the basis of their professional knowledge to carry out innovative research and practice. This enriches the research content of the accounting discipline, promotes its evolution from the traditional role of “value reflection” to the modern role of “value creation,” facilitates the interdisciplinary integration of accounting with information technology, big data, enterprise management, and other disciplines, and strengthens the competitiveness of the discipline.

2. Internal correlation between independent learning ability and innovative capacity of accounting majors

2.1. Autonomous learning is the cornerstone of innovation ability

Innovation is not generated out of thin air, but based on the deep understanding of professional knowledge and the flexible use of cross-domain knowledge. Self-learning enables students to break through the limitations of the classroom and build a dynamic knowledge system to lay the foundation for presenting a novel method. At the same time, the cultivation of critical thinking in the process of autonomous learning is the key to the discovery of the starting point of origination. The research points out that interdisciplinary autonomous learning can guide students to analyze problems from multiple perspectives, construct a knowledge system independently, and improve problem-solving ability and practical innovation ability^[7-8].

2.2. Innovation practice reversely drives the deepening of autonomous learning

When students try to solve practical problems, they will expose the blind areas of their knowledge, so as to stimulate their targeted autonomous learning. For example, in ERP sand table simulation, students will actively learn more advanced cost management concepts and tools if they find that traditional cost allocation methods cannot explain differences in resource consumption. This “practice-demand-learning” closed-loop makes autonomous learning change from passive acceptance of knowledge to active construction, which significantly improves learning efficiency and innovative practical ability.

2.3. Innovative practice is the core driving force of autonomous learning

Students tend to engage in innovative practice when participating in discipline-specific competitions, scientific research projects, or internship training programs. Such problem-oriented “learning needs” generated in practice can effectively stimulate autonomous learning and drive students to search for literature, learn new software, and consult experts in a targeted manner. The outcomes of innovative attempts offer the most direct feedback on students’ in-depth understanding of existing knowledge and their application capabilities. This represents a role transformation from “knowledge recipients” to “problem-solvers,” upgrading learning from passive knowledge reception to active construction. Such role transformation brings about a fundamental change in learning motivation, shifting the cultivation of high-order abilities from external indoctrination to internal generation^[9-10].

2.4. The artificial intelligence environment as the core link for the coordinated development of the two types of capabilities

Artificial intelligence provides an important carrier for the coordinated cultivation of autonomous learning

and innovative capacity. Relying on the digital accounting training platform, universities allow students to conduct simulated financial statement analysis of listed companies. In this process, students need to independently study industrial data and propose innovative risk-identification models, so as to realize the in-depth integration and coordinated improvement of autonomous learning and innovative capacity in the artificial intelligence environment.

3. Existing challenges in fostering independent learning and innovative capabilities among accounting majors

3.1. Limited integration of advanced technologies into the curriculum and weak guidance for independent learning

Accounting programs at many universities still focus on traditional core subjects such as financial accounting, auditing, and tax law. Some universities have added courses such as Accounting Information Systems and Financial Big Data Analysis. Even so, artificial intelligence is not fully included in the course content. Most intelligent accounting courses mainly teach financial software and basic digital tools. Technologies such as natural language processing and knowledge graphs receive much less attention, especially in intelligent auditing and risk control, financial risk early warning, financial fraud detection, and intelligent financial statement analysis. This means that what students learn in class does not always match actual accounting work. Students may therefore have only a general understanding of how digital and intelligent transformation is changing the accounting profession. They may also be unclear about the new abilities expected of accounting professionals. Without enough motivation, it is hard for them to keep learning on their own and develop a lasting habit.

3.2. Traditional teaching methods and limited opportunities for innovative practice

Classroom teaching still relies mainly on the traditional model in which teachers deliver lectures and students complete exercises passively. Modern inquiry-based and immersive teaching methods are not widely used. Teaching cases are mostly based on traditional accounting scenarios and lack comprehensive, open-ended, and inquiry-based cases that deeply integrate artificial intelligence with accounting operations. Experimental teaching mostly uses standardized simulation software for basic accounting procedures and provides little practical training in financial data mining, intelligent financial analysis, and digital financial decision-making based on real corporate data. At the same time, too few interdisciplinary innovation projects in areas such as “accounting + big data” and “accounting + artificial intelligence” are available to students. Students have limited opportunities to participate in interdisciplinary innovative practice, making it difficult for them to develop innovative thinking and apply what they have learned in practice. In addition, current academic assessment systems focus mainly on knowledge memorization and basic abilities such as standardized accounting procedures. They have not yet fully established a diverse assessment framework covering innovative solution design, the application of interdisciplinary thinking, and complex financial problem solving. This narrow assessment focus reduces, to some extent, students’ willingness to explore new methods and broaden their perspectives. It does not support the long-term development of their innovative abilities.

3.3. Students have a limited understanding of the industry and their independent inquiry lacks depth

Some students do not have a comprehensive understanding of the integrated development of artificial intelligence and the accounting industry. They simply understand the intelligent transformation of accounting as the mechanized replacement of basic accounting work by financial software. They have an insufficient understanding of deeper industry changes, such as human-machine collaboration, the digital restructuring of financial processes, and the upgrading of enterprise value management. Their understanding of the new requirements for professional qualities and comprehensive abilities in the accounting industry under artificial intelligence remains limited. Under the influence of academic assessment and employment orientation, students pay more attention to preparing for professional qualification examinations such as the Certified Public Accountant examination and improving their short-term employability. Their learning shows some exam-focused and fragmented features, and they lack systematic learning plans and deeper exploration of advanced fields such as intelligent finance and big data accounting. At the same time, in an online learning environment with diverse information resources, students still need to improve their abilities in information screening, knowledge integration, and independent knowledge construction. Their learning content mostly remains at a basic level, making it difficult to form a systematic and interdisciplinary professional knowledge system. Therefore, the quality of independent learning still needs to be improved, and it remains difficult to meet the requirements for the sustainable development of accounting professionals under digital transformation.

3.4. Insufficient support from high-quality educational resources and a need to improve the environment for innovation

Colleges and universities have built basic teaching laboratories and financial data resource systems, but there is still room for improvement in the development of professional teaching platforms for training intelligent accounting professionals. High-quality teaching resources such as training platforms for financial big data analysis, intelligent audit simulation systems, real business data from enterprises, and practical cases from the latest developments in the industry are relatively limited. This makes it difficult to meet the practical training needs of accounting professionals with interdisciplinary skills in an intelligent environment. In the development of academic competitions, the range of innovative competition projects that integrate accounting with artificial intelligence and big data remains limited. Some teachers are still gaining experience in interdisciplinary teaching and guidance on innovative practice, and their support for students' interdisciplinary innovation projects needs to be strengthened. Current academic exchanges and teaching activities at universities mainly focus on basic theories and the introduction of concepts. A regular system that supports independent inquiry, collaborative innovation, and practical learning has not yet been established. The environment for innovation-focused education in intelligent accounting still needs to be strengthened, and comprehensive support for students' independent learning, exploration, and innovative practice needs further improvement.

4. Paths for improving accounting majors' independent learning and innovative abilities in the context of artificial intelligence

4.1. Restructuring the intelligent accounting curriculum and adding independent learning modules

Universities should offer compulsory courses such as Fundamentals of Intelligent Accounting and Financial Robotics Applications and Development. Artificial intelligence cases should also be included in traditional core courses, including financial accounting and auditing. Students can then learn how modern technology is used together with traditional accounting knowledge. Open elective courses on recent professional technologies are also needed. Students may choose areas such as blockchain auditing and big data risk control according to their own needs and future plans. This allows them to spend more time studying a field that interests them. A micro-credential system could be introduced by universities. Students may complete independent learning tasks through online platforms, such as Python Applications in Finance. Course credits or professional skills certificates can be awarded after they pass the assessment. In this way, students have more reasons to continue learning outside the classroom.

4.2. Building an innovative teaching model through projects and interdisciplinary collaboration

Real business situations and actual company projects should be brought into classroom teaching. Projects can become the main form of learning. Working in groups, students should complete the main steps by themselves, including defining problems, designing solutions, carrying out their plans, and reviewing the results. Accounting students can also work with students from computer science, statistics, and other majors. Different ideas and skills may help them become more innovative and improve their ability to deal with complex problems. The assessment method needs to change at the same time. Project results, technical analysis reports, how innovative the proposed solution is, and its practical value should all be considered. More weight should be given to practical ability. Industry experts can take part in course design, project guidance, and result evaluation. Their involvement can help promote the accurate docking of teaching content, practice scenarios, and real needs of enterprises.

4.3. Building a three-dimensional collaborative support system with platforms, mentors and learning communities

Constant optimization has been made to the school's intelligent accounting training platform. De-identified real corporate data and classic industrial case resources are opened to students, which facilitates their hands-on practices including data modeling and data visualization, and further strengthens students' practical technological application capabilities. An interdisciplinary dual-mentor cultivation mechanism has also been adopted on campus. Students participating in innovation projects can receive joint guidance from teachers with diverse professional expertise, so that core difficulties encountered in their study and practical work can be resolved in a timely manner. A community focused on accounting technological innovation has been set up for all students. Regular case study seminars and experience exchange activities are organized within the community. Latest industrial updates and professional technical guides are continuously released via official social media platforms and online knowledge resource libraries. These efforts help build a stable and immersive learning atmosphere, where students are able to carry out independent study and innovative exploration consistently.

4.4. Strengthening university-enterprise collaborative education to enrich diversified innovative practice opportunities

Stable internship and training bases have been built through close cooperation between universities, accounting firms, and tech companies. Intelligent finance studios and practical training camps are co-developed by these cooperating parties, which enable students to get fully involved in corporate practical projects. These projects cover RPA process design, intelligent report compilation, big data audit, and other practical fields, effectively bridging the gap between professional theories and real industrial practice. Students are motivated to take part in various high-standard professional contests. Typical examples include financial big data competitions and intelligent audit case contests, which play a vital role in improving students' comprehensive professional competencies. For outstanding projects that obtain awards in these competitions, corresponding resource access and incubation support will also be offered to students. A special innovation fund has been set up for accounting undergraduates. It aims to back students who take the initiative to apply for interdisciplinary and practical research programs. Under targeted academic guidance, students are able to transform their research findings into practical operational schemes and formal academic papers. A sound talent cultivation system is therefore formed, which features study improvement through competitions and the integration of academic learning with practical application.

4.5. Giving students a more active role and developing lifelong learning habits

Orientation courses and introductory classes are arranged for accounting majors. In these courses, the influence of artificial intelligence on the accounting industry's development is discussed in a systematic manner. Students are guided to develop a professional view based on technology empowerment and human-machine collaboration and to understand the important role of independent learning and innovation ability in career development. Courses focused on artificial intelligence technology have been added to the curriculum. With the guidance of these courses, students can master information retrieval skills, and their critical thinking as well as problem-solving abilities can be improved at the same time. Students are also encouraged to make their own independent learning plans according to the latest industry developments. In this way, they can shift from passive knowledge acceptance to active learning, and gradually form the habit of lifelong learning.

Funding

The Key Project of "14th Five-Year Plan" of Heilongjiang Province Educational Science in 2024(GJB1424243)

Disclosure statement

The author declares no conflict of interest.

References

- [1] Song SY, Meng H, Nie ZM, et al., 2026, Evaluation of the Application Effectiveness of Artificial Intelligence in Financial Digitalization. *Friends of Accounting*, 2026(S1): 13–17.
- [2] Du YY, 2023, Changes and Innovations in Financial Decision-making in the Age of Artificial Intelligence.

Accounting Learning, 2023(12): 49–51.

- [3] Kuang YT, 2025, Exploration of Teaching Reform of “Industry-Finance-Data Integration” in Accounting Major Based on TPACK Theoretical Framework. *Communication of Finance and Accounting*, 2025(17): 170–176.
- [4] Xie JC, Liu C, Zhou L, 2025, Logic and Path of Cultivating New-Quality Accounting Talents in Application-Oriented Undergraduate Universities under the Background of Digital-Real Integration. *Communication of Finance and Accounting*, 2025(24): 153–160.
- [5] Liang SY, 2026, Exploration of Teaching Reform Path of “Ideological and Political Guidance + AI Empowerment” for Management Accounting Course from the Perspective of Industry-Education Integration. *Business Accounting*, 2026(1): 131–137.
- [6] Cheng Y, 2025, Research on Intelligent Accounting Talent Cultivation under the Perspective of High-Quality Development of Private Economy—Analysis Based on Supply-Demand Fit Perspective. *Communication of Finance and Accounting*, 2025(18): 172–176.
- [7] Ge YJ, 2025, Research on the Impact of Generative Artificial Intelligence on College Students’ Interdisciplinary Learning Ability—Taking Shandong University of Finance and Economics as an Example, thesis, Shandong University of Finance and Economics.
- [8] Li GS, Zhang XJ, Cui JX, 2026, Logic Framework and Implementation Path of Smart Finance Talent Cultivation Based on “Platformization + Scenarioization”. *University Education*, 2026(1): 82–86.
- [9] Wang YC, Qi WX, 2024, Deviation and Return of Autonomous Learning in the Era of Educational Digitalization. *Jiangsu Higher Education*, 2024(5): 61–66.
- [10] Chen Y, Deng JK, 2026, Exploration of the Education Model of “Three Subjects, Three Transformations, One Platform” in the Innovation Practice Class of Programming. *Journal of Higher Education*, 12(7): 74–78.

Publisher’s note

Bio-Byword Scientific Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.