

Research on the Application of Artificial Intelligence in the Teaching of Finance and Taxation Courses

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Abstract

With the digital transformation of the finance and taxation industry and the complexity of the subject knowledge system, the limitations of the traditional teaching mode in practical ability training, knowledge update and personalized teaching are becoming increasingly prominent. With the advantages of data processing, intelligent analysis and scenario simulation, artificial intelligence technology provides a new path for the teaching reform of finance and taxation courses.

Keywords

Artificial Intelligence, Finance and Taxation Courses, Teaching, Application

1. Introduction

1.1. Complexity of the Knowledge System of Finance and Taxation Courses

The finance and taxation course has built a large and complex knowledge network, and the complexity of its knowledge system is mainly reflected in three levels: Interdisciplinary, policy dynamics, and knowledge structure. From the perspective of interdisciplinary perspective, the field of finance and taxation deeply integrates multidisciplinary knowledge such as economics, law, and accounting. Taking the calculation of enterprise income tax as an example, it is not only necessary to use accounting principles to account for the income and cost of the enterprise, but also to adjust the tax payment according to the provisions of the tax law, and at the same time involve the analysis of the impact of macroeconomic policies on tax policies. According to statistics, about 70% of business problems

in actual financial and tax work scenarios require interdisciplinary knowledge to be solved collaboratively. At the same time, the dynamics of policy further exacerbate the complexity of the knowledge system. Taking China's value-added tax policy as an example, in the past five years, it has undergone many changes such as multiple tax rate adjustments, continuous updating of preferential tax policies, and continuous optimization of the tax collection and management model. In 2023 alone, more than 150 VAT-related policy documents will be issued by the national tax system, and this frequent policy change requires that the teaching content of the finance and taxation courses must be updated in a timely manner to ensure that the knowledge learned by students is in sync with the development of the industry. In addition, the knowledge of finance and taxation presents a strict structure, from the basic tax principles, fiscal theories, to advanced international taxation and tax planning; each knowledge point is interlocking, and the misunderstanding or deviation of any link may affect the mastery of subsequent knowledge.

1.2. Practical Operation Ability Training Needs

Under the general trend of digital transformation and the integration of industry and finance, the requirements of the finance and taxation industry for practical operation capabilities have reached a new height. The financial and taxation work of enterprises has changed from traditional manual bookkeeping and paper declaration to relying on digital tools such as the golden tax system and ERP financial module to carry out whole-process management. Taking a large enterprise group as an example, its financial sharing center processes more than 2000 reimbursement documents per day, all of which are completed through electronic invoice recognition and intelligent review systems, which requires practitioners to be proficient in financial software operation and tax declaration system use. According to industry research data, 85% of enterprises list practical operation ability as the primary assessment indicator when recruiting finance and taxation personnel. The importance of practical operation ability development is also reflected in the level of solving practical business problems (Guo, 2023). For example, in the process of tax planning, enterprises need to comprehensively consider factors such as corporate strategy, business model, and tax policy to design a legal and compliant tax-saving plan. This kind of complex practical operation is difficult to achieve by theoretical teaching alone, and it is necessary to simulate the real financial and tax business scenarios of enterprises, so that students can accumulate experience in practice and cultivate their ability to identify and respond to risks. At the same time, with the increasing refinement of fiscal and tax laws and regulations, the risk of tax inspection faced by enterprises has increased, and financial and tax talents with solid practical operation capabilities can help enterprises standardize fiscal and tax management and reduce tax risks.

1.3. Limitations of Traditional Teaching Models

The traditional teaching mode of finance and taxation courses is centered on

teachers' lectures and teaching materials, which is difficult to meet the needs of modern finance and taxation teaching (Hu, 2024). In terms of teaching methods, "cramming" teaching leads to students' passive acceptance of knowledge and low participation in the classroom. According to the survey data of a university, the active questioning rate of students in the traditional finance and taxation classroom is less than 10%, and the knowledge forgetting rate is as high as 60% after three months. This teaching mode ignores the subjective position of students and cannot stimulate students' interest in learning and innovative thinking. In terms of teaching resources, traditional textbooks have a long update cycle, which makes it difficult to keep up with the rapid changes in fiscal and tax policies. The content of some textbooks lags behind the actual policy by 1 - 2 years, resulting in a disconnect between what students have learned and industry practice. In addition, traditional teaching lacks effective support for practical teaching, outdated laboratory equipment, and slow update of the case library, which cannot simulate real financial and tax business scenarios. According to statistics, the practical teaching hours of traditional finance and taxation courses account for less than 30%, which is far from the requirements of enterprises for the practical ability of finance and taxation talents. The students cultivated by this teaching mode often have solid theoretical knowledge, but weak practical operation ability, and it is difficult to quickly adapt to the needs of corporate finance and taxation jobs.

2. The Necessity of Integrating Artificial Intelligence with the Teaching of Finance and Taxation Courses

2.1. Improve the Efficiency and Quality of Teaching

In the traditional teaching of finance and taxation courses, teachers need to spend a lot of time preparing lessons, correcting homework and answering students' questions, and the teaching efficiency and quality are limited by manpower and time costs. The introduction of artificial intelligence can provide a powerful boost for teachers. In the process of lesson preparation, the intelligent lesson preparation system can automatically screen and integrate high-quality teaching resources based on the database of massive financial and tax cases, policies and regulations, according to the syllabus and students' learning conditions, generate personalized lesson plans and courseware, and greatly shorten the time for teachers to prepare lessons. At the same time, the intelligent grading tool can quickly and accurately score students' homework and tests, and analyze students' mastery of various knowledge points, providing data support for teachers to accurately grasp the teaching effect. In the classroom, AI technology can also enable intelligent interaction. For example, through natural language processing technology, intelligent teaching assistants can answer students' questions in real time and relieve the pressure of teachers to answer questions in the classroom. With the help of virtual simulation technology, a financial and taxation business scenario simulation system is constructed, so that students can carry out practical training such as tax declaration and financial statement preparation in a virtual environment, so that the ab-

stract financial and taxation knowledge becomes intuitive and easy to understand, effectively improve students' practical operation ability and depth of knowledge, and then improve the quality of teaching (Zhou & Xie, 2025).

2.2. Meet Personalized Learning Needs

Each student is different in terms of learning ability, learning pace and knowledge base, and the traditional "one-size-fits-all" teaching model is difficult to meet the individualized learning needs of students. With its powerful data analysis and machine learning capabilities, AI is able to tailor learning solutions for students. Through the collection and analysis of students' daily learning data (such as homework completion, test scores, classroom performance, etc.), the intelligent learning system can accurately determine students' knowledge weaknesses and learning styles, and push personalized learning content for them (Mei, 2024). In addition, AI enables intelligent learning path planning. The system dynamically adjusts the learning plan according to the student's learning progress and feedback, ensuring that the student learns at the pace that works best for them. For example, when a student does not perform well in a certain financial and taxation knowledge point, the system will automatically add relevant practice questions and explanation videos to help students consolidate their knowledge. If students have a quick grasp of the content of a certain chapter, the higher-level learning content will be pushed in time to fully stimulate students' learning potential, meet the personalized learning needs of different students, and promote students' all-around development.

2.3. Adapt to the Digital Development Trend of the Industry

With the vigorous development of the digital economy, the finance and taxation industry is undergoing profound digital transformation. The wide application of artificial intelligence, big data, blockchain and other technologies in the field of finance and taxation has made the financial and taxation workflow continuously optimized and the level of intelligence is increasing. The intelligent financial and taxation robot can automatically complete repetitive tasks such as invoice identification, account processing, and tax declaration, which greatly improves the efficiency and accuracy of financial and taxation work. Big data analysis technology can be used for financial risk early warning, tax inspection and other work, providing strong support for enterprises and government decision-making. In such an industry background, the teaching of finance and taxation courses must be in line with the development trend of the industry. Integrating artificial intelligence into the teaching of finance and taxation courses, so that students can be familiar with and master the application of artificial intelligence tools and technologies in the field of finance and taxation at the learning stage, will help cultivate high-quality financial and taxation talents who can meet the needs of the industry (Wang, 2024). If students are not exposed to and learn these cutting-edge technologies during their time at school, it will be difficult for them to quickly adapt to the

digital financial and tax work environment after graduation, and they will face the problem of insufficient employment competitiveness. Therefore, the integration of artificial intelligence and finance and taxation course teaching is an inevitable requirement to adapt to the development trend of industry digitalization and cultivate finance and taxation professionals in the new era.

3. Application Scenarios and Technical Implementation of Artificial Intelligence in the Teaching of Finance and Taxation Courses

3.1. Personalized Learning Path Planning

With its powerful data processing and analysis capabilities, artificial intelligence tailors personalized learning paths for learners of finance and taxation courses. In the traditional teaching mode, it is difficult for teachers to accurately grasp the learning progress, knowledge mastery and learning style differences of each student, but artificial intelligence breaks this limitation. Based on big data analysis technology, the system can collect multi-dimensional data of students in the learning process of finance and taxation courses, such as the correct rate of classroom answers, the completion of homework after class, the duration of online learning, and the results of chapter tests. Through machine learning algorithms, these data are deeply mined, and the mastery level of students in various modules of the financial and taxation knowledge system (such as tax law knowledge, financial accounting, tax planning, etc.) is analyzed, and the strengths and weaknesses of students are identified. Take the collaborative filtering algorithm as an example. It is a classic machine learning algorithm widely used in recommendation systems, whose core idea is that “birds of a feather flock together, and people of a mind fall into the same group”. By analyzing users’ historical behavior data (such as browsing records, purchase preferences, ratings, etc.), the algorithm identifies user groups with similar interests or item sets with similar characteristics, and then recommends content that users may be interested in. For example, if students frequently make mistakes in VAT calculation, enterprise income tax declaration and other knowledge points, the system can judge that their tax calculation and declaration module is insufficient. On this basis, AI uses recommendation algorithms to push personalized learning resources and learning plans for students. For students with a weak foundation, it is recommended to explain the basic concepts of finance and taxation, analyze classic examples, and set basic practice questions to help them consolidate their basic knowledge. For students who have spare time, we will push cutting-edge fiscal and tax policy interpretation, complex fiscal and tax case analysis, academic research papers and other extended learning materials. At the same time, according to the students’ learning habits and time arrangement, a reasonable learning schedule is formulated to ensure that students learn the right content at the right time and maximize learning efficiency.

Naturally, data privacy, security, and transparent usage policies are interrelated and mutually supportive. Together, they maintain the health and stability

of the data ecosystem. They are not only necessary for protecting personal rights and interests but also an important guarantee for the sustainable development of society.

3.2. Intelligent Teaching Assistance

In the teaching process of finance and taxation courses, artificial intelligence plays an important role as an intelligent teaching assistant to improve the efficiency and quality of teaching in an all-around way. In the lesson preparation process, teachers can use artificial intelligence tools to quickly retrieve and organize massive data in the field of finance and taxation. Natural language processing technology can understand the keywords and needs input by teachers, screen out the most relevant and high-quality teaching materials from various financial and tax databases, policy documents, academic literature, and news information, and automatically classify and organize them. For example, when teachers are preparing to explain the financial and tax treatment courses of corporate mergers and acquisitions, artificial intelligence can quickly collect the latest financial and tax regulations, typical corporate mergers and acquisitions cases, and the analysis opinions of experts and scholars, saving teachers a lot of time and energy in lesson preparation. In classroom teaching, the intelligent teaching assistance system uses speech recognition and semantic analysis technology to understand the questions raised by students in real time. Whether it is a question about the terms of fiscal and tax policies or a puzzle about a complex fiscal and tax case, the system can quickly match the answers in the knowledge base, provide reference for teachers, and assist teachers to answer students' questions in a timely and accurate manner. In addition, AI can intelligently evaluate students' classroom performance and learning outcomes. By analyzing the content of students' speeches in class discussions, the quality of answering questions, and the degree of contribution in group assignments, combined with homework and test results, a comprehensive and objective evaluation report is given, which provides a strong basis for teachers to understand students' learning situation and adjust teaching strategies.

Artificial intelligence conducts an intelligent assessment of students' classroom performance and learning outcomes. By analyzing the content of students' speeches in class discussions, the quality of their answers, their contribution in group assignments, and combining these with homework and exam results, it generates comprehensive and objective assessment reports. These reports provide a strong basis for teachers to understand students' learning situations and adjust teaching strategies. At this point, teachers become instructors for students' personalized learning. Based on the assessment reports generated by artificial intelligence, teachers can accurately grasp each student's learning weaknesses and strengths, and tailor personalized learning suggestions and tutoring plans for them. For students who have difficulties with a certain fiscal and taxation knowledge point, teachers will use relevant learning resources provided by artificial intelligence to conduct targeted tutoring, helping students overcome difficulties. For students

who have spare capacity for learning, teachers will guide them to explore deeper fiscal and taxation knowledge with the help of artificial intelligence, expanding their learning boundaries. In the artificial intelligence-driven fiscal and taxation teaching environment, teachers are no longer merely transmitters of knowledge but have transformed into facilitators of learning and mentors who guide students in using artificial intelligence-driven content. Through collaborative cooperation with artificial intelligence, they can better assist students in learning fiscal and taxation knowledge and improve their abilities

3.3. Practical Teaching Innovation

The finance and taxation course is very practical, and the application of artificial intelligence has brought a new mode and experience to practical teaching. Using virtual reality (VR) and augmented reality (AR) technology, artificial intelligence builds highly simulated financial and tax practice scenarios. Students feel as if they are in the real corporate finance and taxation department or tax hall, and carry out operations such as invoice issuance, tax declaration, financial statement preparation, and tax audit response. In the virtual environment, students can simulate the handling of various complex financial and tax affairs, such as facing sudden tax controversies of enterprises, and try to formulate solutions by communicating with virtual tax personnel and reviewing relevant laws and regulations. This immersive and practical teaching method not only allows students to feel the actual operation process of financial and taxation work more intuitively, but also cultivates students' adaptability and problem-solving ability in actual work scenarios. At the same time, the AI-driven intelligent financial and tax training platform can provide students with a large number of simulation cases. These cases are based on the financial and tax data of real enterprises, and through data desensitization and processing, they form representative and diverse training materials. According to the student's learning stage and ability level, the platform automatically pushes case tasks of different difficulty levels, and the system immediately carries out intelligent correction and feedback after the students complete the tasks. For example, after students complete the preparation of a corporate financial statement, the system will automatically check the accuracy of the report data, the reasonableness of the collusion relationship, point out the existing errors and problems, and provide detailed analysis and improvement suggestions to help students find their own shortcomings in time and improve their practical skills.

4. Problems and Countermeasures of Artificial Intelligence in the Teaching and Application of Finance and Taxation Courses

4.1. There Is a Problem

1) Limitations and stability of technology application

At present, there are still many limitations in the application of artificial intel-

ligence technology in the teaching of finance and taxation courses. In the field of finance and taxation, tax policies and regulations are constantly updated, and financial and tax business scenarios are complex and changeable, while artificial intelligence algorithms have limited analytical capabilities when processing complex and unstructured financial and tax case data, making it difficult to accurately refine key knowledge points and business logic. For example, when simulating corporate tax planning scenarios, AI systems may not be able to fully consider the differences in preferential tax policies and the diversity of business activities in different regions, resulting in a lack of practicality in the planning solutions provided. At the same time, the stability of technology is also worrying, and the intelligent teaching platform occasionally has system crashes and freezes, which seriously affect the teaching progress. When conducting online real-time Q&A or simulated training, once the system fails, the interaction between teachers and students is forced to be interrupted, and the teaching effect is greatly reduced. In addition, some artificial intelligence teaching tools have a single function, which can only meet the needs of simple knowledge explanation and practice, and cannot realize complex teaching scene simulation and in-depth teaching analysis, and it is difficult to give full play to the advantages of artificial intelligence in teaching. In addition, the implementation costs of advanced technologies such as artificial intelligence and virtual reality are relatively high, which may create a digital divide among different educational institutions. Institutions with strong financial strength can more easily introduce and upgrade these technologies, providing strong support for teaching; while institutions with relatively scarce resources may lag behind due to their inability to afford the costs, which in turn affects the overall balance and popularity of the application of these technologies in the field of finance and taxation teaching (Qi, 2023).

2) Teachers' ability to adapt to new technologies is insufficient

Many teachers of finance and taxation courses have long been accustomed to the traditional teaching mode, and have resistance or fear of the application of new artificial intelligence technologies. They lack an in-depth understanding of the principles, operation methods and application strategies of AI technology, and it is difficult for them to organically integrate AI technology with the teaching content of finance and taxation courses. For example, when using the intelligent teaching platform for instructional design, some teachers are not familiar with the functional modules of the platform, and cannot use big data to analyze students' learning and formulate personalized teaching plans. In addition, when teachers use artificial intelligence to carry out teaching activities, they often lack effective control over the teaching process, it is difficult to balance the relationship between technology application and traditional teaching methods, and it is easy to over-rely on technology or technology application is a mere formality. At the same time, due to the lack of relevant training and practice opportunities, teachers' innovation ability in AI teaching is insufficient, and it is difficult to develop distinctive and attractive AI teaching resources.

3) differences in students' acceptance of AI teaching

There are significant differences in students' acceptance of AI teaching. On the one hand, some students are curious about new technologies and can actively adapt to the AI teaching mode, use intelligent learning tools to learn independently, and improve learning efficiency. However, there are also a considerable number of students who are resistant to artificial intelligence teaching, accustomed to the teacher's face-to-face explanation and guidance, unfamiliar with the operation of the intelligent teaching platform, and unable to get effective help in time when they encounter problems in the process of independent learning, which is prone to learning anxiety and frustration. In addition, students with different learning abilities and learning habits have different effects when using AI to learn. Students with strong learning ability can make full use of the learning resources and personalized learning solutions provided by artificial intelligence to expand and deepen their knowledge. Students with weak learning ability may get lost in the massive amount of learning information and cannot accurately grasp the key points of learning, resulting in poor learning results.

4.2. Solution

1) Strengthen technology research and development and optimization

In view of the limitations and stability of technology application, R&D investment in the field of artificial intelligence finance and taxation teaching technology should be increased. Universities, scientific research institutions and enterprises can establish an industry-university-research cooperation mechanism to jointly carry out technical research. On the one hand, in-depth research on the business characteristics and teaching needs in the field of finance and taxation, the development of more targeted artificial intelligence algorithms and models, and the improvement of the system's ability to analyze and process complex financial and tax data and the authenticity of case simulation. For example, combined with the latest deep learning technology, we can build an intelligent teaching system that can dynamically adapt to changes in tax policies and enterprise business scenarios. On the other hand, the stability of the intelligent teaching platform should be strengthened, the system architecture should be optimized, and distributed storage and cloud computing technologies should be adopted to improve the carrying capacity and response speed of the platform. At the same time, we will continue to enrich the functions of teaching tools and develop more innovative and practical teaching applications, such as virtual financial and taxation training platforms, intelligent financial and tax decision-making simulation systems, etc., to provide teachers and students with a better teaching experience.

2) Carry out artificial intelligence teaching ability training for teachers

In order to improve teachers' adaptability to artificial intelligence technology and the level of teaching application, a sound teacher training system should be established. First of all, teachers are regularly organized to participate in special training on the foundation of artificial intelligence technology, the operation of

intelligent teaching platforms, and the integration of teaching design and artificial intelligence, and industry experts and technical personnel are invited to give lectures to help teachers master the basic principles and methods of artificial intelligence teaching. Secondly, teachers are encouraged to explore the practice of artificial intelligence teaching, set up special teaching reform projects, support teachers to apply artificial intelligence technology in the teaching of finance and taxation courses, and promote and commend excellent teaching practice cases. In addition, a platform for teachers to exchange and learn will be established to promote the sharing of AI teaching experience and experience among teachers and jointly solve problems encountered in the teaching process. Through continuous training and practice, we will improve teachers' ability to innovate in artificial intelligence teaching, and promote the transformation of traditional teaching mode to intelligent teaching mode.

3) Improve the guidance and adaptation mechanism of students

In order to improve students' acceptance and learning effect of AI teaching, schools and teachers should take a variety of measures to guide students to adapt to AI teaching mode. In the early stage of teaching, artificial intelligence teaching introduction and operation training courses are carried out to help students understand the functions and usage methods of the intelligent teaching platform, and eliminate students' strangeness and resistance to new technologies. At the same time, according to the learning ability and characteristics of students, a personalized learning guidance plan is formulated to provide more learning resources and learning guidance for students with weak learning ability, and help them formulate reasonable learning plans and clarify learning goals. In addition, a student feedback mechanism should be established to keep abreast of students' problems and needs in the AI learning process, and to adjust and optimize teaching methods and learning resources. Through organizing study groups and carrying out online and offline learning exchange activities, we create a good learning atmosphere, stimulate students' interest and enthusiasm in learning, and improve students' independent learning ability.

5. Conclusion

First, with the continuous iterative upgrading of artificial intelligence technology, artificial intelligence will penetrate more deeply into all teaching links of finance and taxation courses, forming an intelligent closed loop of the whole process from curriculum design, teaching implementation to effect evaluation; second, the trend of interdisciplinary integration, the combination of artificial intelligence with blockchain, big data and other technologies provides richer technical support for finance and taxation teaching to help solve complex problems in the field of finance and taxation; third, globalization and collaboration rely on artificial intelligence technology to realize the sharing of global financial and taxation education resources, promote the international docking of financial and taxation talent training standards, and cultivate compound financial and taxation talents who can

adapt to global economic development (Zheng, 2024).

In short, with the continuous iteration and upgrading of artificial intelligence technology, AI will penetrate more deeply into various teaching links of finance and taxation courses, forming a full-process intelligent closed loop from curriculum design, teaching implementation, to effect evaluation. In this process, it is necessary to formulate clear indicators to evaluate the success of AI integration. For example, performance indicators such as students' course scores and proficiency in knowledge mastery can be compared horizontally with those of students using traditional teaching methods, so as to intuitively reflect the actual role of AI in improving teaching effects.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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