AI Empowers Innovation and Entrepreneurship Education in Universities: Exploring the Practical Path of Deep Integration of Competition and Education

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Abstract: With the rapid development of Artificial Intelligence (AI) technology, the education sector is facing new transformation opportunities. In particular, in entrepreneurship and innovation courses, the deep integration of AI technology with sports education can effectively combine practical learning, competitions, and course content, significantly enhancing teaching quality and students' innovative capabilities. However, many universities still face challenges such as fragmented course content and limited application of AI technology when implementing entrepreneurship and innovation courses. This paper explores the path for the deep integration of AI technology with sports education models, proposing that through intelligent teaching support, not only can student learning efficiency be improved, but their innovative thinking and entrepreneurial practice abilities can also be enhanced, thereby promoting systematic reforms in entrepreneurship and innovation education.

Keywords: Innovation and entrepreneurship education; Artificial Intelligence (AI); Deep integration of competition and education

1. Introduction

As the global economy becomes more integrated and technology advances rapidly, governments around the world view the cultivation of innovative and entrepreneurial talents as a key task to drive economic development. Since the release of the "Implementation Opinions on Deepening the Reform of Innovation and Entrepreneurship Education in Higher Education Institutions" in 2015, innovation and entrepreneurship education has gradually become an important part of higher education reform, receiving strong policy and financial support. The rapid development of Artificial Intelligence (AI) technology has brought new opportunities for educational reform, especially in the field of innovation and entrepreneurship education. AI technology significantly enhances teaching quality and learning outcomes through personalized learning paths, intelligent teaching methods, and data analysis. In particular, the deep integration of AI technology with competition and education in innovation and entrepreneurship courses can effectively combine practical learning, competitions, and course content, providing innovative pathways for the education system[1].

Despite many universities offering courses related to innovation and entrepreneurship, there are widespread issues such as fragmented course content and lack of systematic integration, which limit students 'development in innovative thinking and practical skills. The application of AI technology in these courses is still in its early stages,

failing to fully tap into its potential for personalized learning and intelligent auxiliary teaching. Traditional course design and teaching methods fail to meet the diverse learning needs of modern students and are out of touch with the actual demands of social development. Therefore, it is urgent to explore how to deeply integrate AI technology with education, through innovative educational models, not only to improve course quality but also to effectively promote students' innovative thinking and entrepreneurial practice abilities.

2. Analysis of the Current Situation of Innovation and Entrepreneurship Education in Universities

(1) Realistic dilemma

1) The application depth of AI technology is insufficient, and the intelligent support is limited

Despite the initial application of AI technology in education and significant progress in areas such as intelligent teaching and personalized learning, the use of AI in innovation and entrepreneurship courses is still in its infancy, lagging far behind advancements in other disciplines. Most universities' innovation and entrepreneurship education programs lack adequate intelligent tools and resources, failing to fully tap into the vast potential of AI technology, which results in their effectiveness being underutilized in educational practice. Currently, most innovation and entrepreneurship courses rely heavily on traditional teaching methods, with little use of AI technology for course design, instructional organization, and student interaction. Although some universities have introduced basic AI-assisted tools, such as smart teaching platforms and online learning systems, these tools are often limited in function, typically only providing knowledge point delivery and simple assessments, lacking deep intelligent support and unable to offer dynamic learning paths tailored to individual student needs.

In the general entrepreneurship and innovation courses, the deep integration of AI technology has not received due attention. Many courses still focus too much on theoretical teaching, neglecting the potential to combine AI technology with practical operations and innovative practices. The main advantages of AI technology, such as intelligent feedback, personalized learning, and data analysis, have not been fully utilized in current entrepreneurship and innovation courses. This results in insufficient interactivity and flexibility in course content, failing to effectively enhance students 'participation and practical skills. Therefore, the application potential of AI technology in entrepreneurship and innovation courses has yet to be fully realized. There is an urgent need to introduce more innovative practical components and intelligent teaching methods to promote the deep application of AI technology, thereby comprehensively improving course quality and students' entrepreneurial and innovative capabilities.

2) The course practice link is insufficient, and the theory is out of touch with the reality

Currently, most entrepreneurship and innovation education courses tend to focus on theoretical teaching, neglecting the integration with real-world entrepreneurial scenarios, which leads to bottlenecks in students' development of innovative thinking and entrepreneurial skills[2]. Although many universities offer foundational courses such as entrepreneurship basics and innovation management, these courses often rely heavily on traditional classroom lectures. The content is difficult to connect with the complexity and challenges of actual entrepreneurial environments, making it hard for students to deeply understand and apply their knowledge in practice. Students lack opportunities to transform theory into practical skills during their learning process and cannot gain the necessary hands-on experience through personal engagement.

Some universities have moved to correct this defect, such as entrepreneurship competitions, project practices, and business incubation, but they are still unable to effectively bridge the gap between course content and practical activities. In practical activities, they are often not closely integrated into the curricula, which can give rise to students being unable to connect what they learn in the classroom to real operational processes when

they participate in these practical activities. For example, an entrepreneurship competition or a project practice is usually viewed as an extra-curricular activity rather than a systematic and co-related system. Consequently, although students may perform these practices, they never successfully integrate theoretical comprehension with applied problem-solving, which consumes most of the time spent in practical activities, drastically reducing the contribution of practical activities. There are few universities with long-term planning and clear teaching objectives for entrepreneurship practice segments, few project designs for entrepreneurship education are end-to-end pushed, and very few projects will have such sustained support to cultivate innovation capabilities among students.

3) The depth of integration is insufficient, and the curriculum is disconnected from practice

The integration of competition and education, which combines innovation and entrepreneurship competitions with course content, is considered one of the key pathways to enhancing the effectiveness of innovation and entrepreneurship education. Through this model, students can apply theoretical knowledge in practice, thereby strengthening their innovative thinking and practical skills. However, in most universities, especially traditional institutions, the integration and application of the competition-education model are still at an early stage. Many courses on innovation and entrepreneurship still rely on traditional teaching methods and lack comprehensive design that organically integrates innovation and entrepreneurship competitions, practical projects, and theoretical courses[3].

This is in response to the fact that many universities entrepreneurship and innovation education courses are still only on the transmission of a single theoretical knowledge, ignoring the ability to integrate entrepreneurship and innovation of the competition as well as practical projects into teaching. Entrepreneurship and innovation competitions and real projects are often separate activities that lack adequate integration in the classroom and effective interaction and feedback. Moreover, this disconnect between theory and practice not only diminishes the students' interest in learning, but it also restricts the chances of them learning and implementing entrepreneurial and innovative skills in real life. Students who participate continue from these activities generally manage to apply very little of their classroom learning to solve real-world problems and undermine what value these courses may have.

(2) Attribution analysis

1) Traditional education mode cannot meet the needs of modern education

In the process of promoting innovation and entrepreneurship education reform, universities generally face a profound contradiction between traditional educational models and the application of modern technology. Traditional educational models are typically teacher-centered, with teaching processes mainly relying on lectures by teachers and textbook content, where students acquire knowledge through classroom learning. This model focuses on the transmission of knowledge while neglecting the stimulation of students 'innovative thinking and the cultivation of practical skills. However, innovation and entrepreneurship education fundamentally requires strong practicality and interactivity; course design should place greater emphasis on fostering students' innovative thinking and practical operational abilities. Currently, especially in the field of innovation and entrepreneurship education, traditional educational models have failed to adequately integrate students 'actual needs and innovative practices, leading to a significant disconnect between course content and students' personalized learning requirements.

Classical teaching models have no longer been sufficient in meeting fast-changing educational needs, owing to the advancement of AI technology and new educational tools. While these methods struggle to adjust quickly to the technological evolution making students demand for more interactivity, realism and practicality. Consider the traditional classroom instruction, which is predominantly a one-to-many format, failing to cater to the changing and more personalized learning needs of today's learners. In the classroom of the traditional model, the path of learning is often the same for all students and does not include personalized modifications that are suited for each student

based on their specific learning needs and abilities. As a result, how to break the shackles of traditional education models through integration with modern technologies, particularly AI technology, has become a pressing problem that needs to be solved as soon as possible in the current educational reform.

2) Obstacles in the application of integrated sports model in curriculum setting

Although the deep integration model of entrepreneurship and education has been widely considered an effective teaching form to improve the quality of innovation and entrepreneurship education, there are problems with insufficient practical exploration in many universities in recent years. In other words, it faces obstacles in integrating innovation and entrepreneurship courses with entrepreneurial competitions and entrepreneurial project operations. While many universities offer relevant courses on innovation and entrepreneurship, these still often tend towards theoretical instruction, without a close combination of innovation and entrepreneurship competitions and real projects. However, due to the fact that the intermediary link between the courses and practical activities is not closely linked, the gap between the theoretical knowledge and practical entrepreneurial situations makes it impossible to reflect the practical application of the courses, leading to a lack of innovation and practical ability of students.

Some universities consider innovation and entrepreneurship completions and project practice as an effort out of course. This disjointed configuration inhibits the students' ability to participate in the practical aspects during their normal course of study. As a result, the disconnection between theoretical courses and practical activities due to the fact that there is no systematic integration does not allow students to deepen their understanding of theories learned in practice, thus greatly reducing the practical significance of courses. Though students engage in such competitions and practical projects during their education, invariably they function as stand-alone events, divorced from the flow of classroom instruction, with little organic interaction and feedback loops. Consequently, students can struggle to apply their theoretical knowledge in practice.

3) Technical barriers and teacher shortage limit the application of AI technology

When one considers the application of AI technology in many universities around the world, many lack the necessary technical support and basic hardware facilities to run AI technology, which directly impacts the efficiency of its use. In order for AI technology to work well, it needs to have a powerful underlying software platform, hardware equipment and sufficient data support. However, the technological underpinning of many universities is not adequately developed which poses a challenge for universities to provide the right assurances for the large-scale deployment of AI technology in education. Consequently, the role of A I tools in the design and implementation of the curriculum and in its ability to support student learning is still unrealized, and technology has not delivered on its promise.

The teachers lack enough technical application-level skills, which has become a crucial limiting factor for the effective application of AI technology. However, though many teachers are rich in traditional teaching experience, they even do not have a deep understanding of the AI technology and not have the practical ability to operate the AI technology. AI technology has only partially penetrated into course content, and many teachers do not take full advantage of AI's intelligent tools to enrich students 'learning experience and innovation ability. The lack of corresponding skills of teachers minimizes the potential of artificial intelligence technology for the advantages of personalized learning, intelligent assessment, interactive teaching, and so on, affecting the cultivation of students' innovative ability and the improvement of their hands-on ability.

3. AI empowers the Practice Path of Innovation and Entrepreneurship Education in Universities

(1) Deep integration of AI technology to enhance intelligent support

For us to apply the power of AI technology correctly toward innovation and entrepreneurship courses, we must first create personalized learning recommendation systems that provide custom-built learning approaches for students. AI can analyze all students 'learning history, grades, interests and so on in real-time, and intelligently recommend the best learning content, project tasks, or case studies according to these data. For instance, in an innovation management course, by gauging students' master of each module, AI can automatically recommend further materials, case analyses or related online courses, enabling students to devote themselves to more targeted learning along their personalized paths. Such smart suggestions not just increases learning efficiency, but also encourage students to take charge of their learning, make sure they learn the relevant subject at their own pace, thus improving the learning results.

The advancement of this technology allows students to receive instant response and accurate assessments, which promotes interactivity in learning. For example, when students undertake business plan writing or market research assignments, the AI solution can auto-analyze and grade their submissions and provide detailed feedback recommendations. AI could, for instance, intelligently read through market research reports, identify logical flaws in the reports, lack of data or biases in market analysis, etc. and suggest corresponding improvements. It can even suggest articles or resources that can help students adapt their analytical strategy. This real-time evaluative feedback mechanism allows students to issue early warnings when problems arise, but also to continuously improve their innovative solutions to problems in practical operations, thus enhancing their practical skills and innovative thinking.

AI technology can customize the course materials according to changing student needs and the evolving times. AI can real-time adjust the difficulty or pace of the course content through intelligent data by analyzing students' learning progress, classroom interaction and project performance. If a student struggles with a specific module, AI can automatically suggest supplementary learning material (e.g., practice questions, video tutorials, or case studies) to address such weaknesses. It also modifies the pace of instruction according to real-world conditions so that every student understands and masters key ideas. This intelligent dynamic adjustment enables course content to more flexibly adapt to individual student needs, thus improving the adaptability and practicality of the courses, and significantly improving the quality of teaching and student learning outcomes in innovation and entrepreneurship courses.

(2) Strengthen the practical link and shorten the distance between theory and practice

According to the basic elements of process system school, the combination innovation of virtual enterprise group and the physical entities should construct the real operation, and the practical implementation of democratic entrepreneurship and innovative ideology foundation, a new circle of entrepreneurship ecology and incentive mechanism, using the real operation can be set up after the dematerialized link of education is additive. In the virtual setting, students are able to do things like market research, product design, and financial planning. The system can track students' decision-making in real time and offer tailored feedback. For instance, in the early stage of the entrepreneurship, AI technology can automatically analyze survey data, recognize potential market opportunities and threats, and provide optimization suggestions to help students observe and adjust their entrepreneurial plan accordingly. This platform allows students to experience real-world entrepreneurial activity and enables experimentation of innovation and entrepreneurship concepts in a failure-free environment. Through this activity, they can improve their skills and learn to solve practical problems.

All these can be achieved only when universities work closely with businesses to act on real entrepreneurial projects and incubation activity — to improve the practical experience of students. Students can collaborate

with industries and companies on specific entrepreneurial projects and help businesses with market research, business plan writing, product design, and other endeavors. For example, Universities can partner with the startups to provide a platform of students project incubator. Here, students apply their theoretical knowledge and also collaborate on improving their business operations and teamwork in working alongside corporate teams and helping to solve market issues from the real world[4]. Using their own real entrepreneurial projects, students can learn much more about the complexity of the entrepreneurial process, while developing their ability to solve realistic problems and laying a solid foundation for their future entrepreneurial process.

University innovation entrepreneurship competition, such as the earlier university debate in general and stimulate the student thesis competition of the real competition, to provide students with more practical opportunities, greatly promote the students of the collaborative collisional innovative thinking. Students must make business plans according to the application theory, which takes into account market demand, competitive analysis, resource allocation and other practical issues and implement them in these competitions and experience through practical actions. AI technology can provide smart support to these competitions, analyzing the advancement, decisions, and creative solutions of the participating teams in real-time, allowing students to adapt their strategies, while advancing the outcomes of the competition. Like, AI can self-grade business plans and market analysis reports submitted by students, and offer suggestions to help them better understand critical aspects of the entrepreneurial process. Participating in these competitions allows students to use their knowledge to solve practical problems while also cultivating their entrepreneurial awareness and competition awareness, thus improving their innovation and entrepreneurship capabilities.

(3) Promote the deep integration of competition and education, and strengthen the organic combination of curriculum and practice

The deep integration of innovation and entrepreneurship course design with competition content can effectively stimulate students' interest in entrepreneurship and ensure the smooth implementation of entrepreneurship contests such as "China Innovation and Entrepreneurship Contest". This guarantees that students should not only learn the theoretical knowledge knowledge in the course to verify their understanding of the knowledge points in the actual competition and deepen their impression in the project practical activities. For example, how in an innovation management course, students not only need to gain competence in designing innovative business models, but also take part in relevant competitions where they can take those models into practice – and let the market and investors apply real testing. With theory and practice combined, students will gain deeper knowledge of course content and learn to apply knowledge flexibly in an ever-changing business environment. Integrating applied innovation into the curriculum not only deepens the theoretical learning of students, but it also improves their ability to solve complex problems and augments their practical skill set.

AI technology can greatly improve the intelligence level of competitions in the competition education model and further enhance students 'learning experiences. AI systems can monitor students' progress in real time, analyze their business plans and financial models, and deliver informed feedback. AI can, for example, assess students' market strategies and product positioning, identify potential issues, and automatically generate suggestions on how they can improve. By refining this intelligent feedback mechanism, it not only helps students to quickly adjust competition strategies, and provides a clear learning path for students, allowing the learning process to be continuous optimization and innovation in practice. AI can also use "big data" analysis, so as to evaluate the feasibility of authors and contributors of the project, providing forward-looking advice for students to make better overall understanding and adjustment of entrepreneurial plan.

In order to realize the deep integration of competition-education model, we should systematically integrate course content and practical projects, innovation and entrepreneurship competitions, so as to form a comprehensive and highly interactive learning platform. When it comes to curriculum design — real entrepreneurial projects

and innovation competitions may be presented as modular content. Certain courses may even offer students opportunities to compete in industry competitions or business plan contests, where they can utilize the theories they have learned throughout the competition process. Practically-oriented courses and competitions are fully integrated to ensure that students will have a wealth of practical experience, and they will be able to use practice to quickly test and optimize their learning content. This positive feedback mechanism is the fact that students will continue to enhance their innovation and entrepreneurship ability, team collaboration ability and practical operational ability, and provide good foundation for future entrepreneurship.

4. Conclusions

The Theoretical Contribution of AI Technology-empowered General Entrepreneurship and Innovation Course: The Role of Deeply Integrated Competitive Education in Quality Enhancement and Ability Improvement. According to research results, implementing AI technology can effectively help in improving the interactivity, personalization, and practicability of courses, which can significantly improve the students' innovative ability and entrepreneurial practice. AI technology not only tailors the learning content and adjusts the learning process based on the real-time analysis of the individual needs of students through personalized learning recommendations and the construction of virtual entrepreneurship platforms, and ultimately improves the learning outcome based on data driven course feedback. AI technology also allows monitoring students learning status in real-time and offering accurate learning path adjustments and personalized guidance, thus effectively helping students overcome knowledge blind spots and shortcomings in traditional education models.

The model of deep integration between education and entrepreneurship greatly strengthens the practicality and timeliness of the course, realizing a close connection between the course teaching and innovation and entrepreneurship competitions. The students assimilate the core knowledge of innovation and entrepreneurship by studying theory in class but also continuously consolidate and expand the theoretical knowledge they have learned through various methods such as participating in innovation and entrepreneurship competitions, real projects and other practical activities. Not only does this close blending of theory and practice make the course more interesting and relevant, it definitely boosts students ability to solve real-world problems. To achieve the purpose of cultivating students' innovative thinking and entrepreneurship ability, this model fully applies AI technology, such as data analysis and intelligent feedback, etc. to optimize the implementation effect so that students are actively looking for themselves in a more specific and interactive learning environment, which allows them to constantly develop and grow and improve their overall capability in innovation and entrepreneurship.

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