

# Promotion and Impact of Innovation and Entrepreneurship Education on Faculty Development: A Look into China Universities

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## ABSTRACT

This study looked into the impact of innovation and entrepreneurship education on faculty skills development by evaluating the respondents on promoting innovation and entrepreneurship education, on the impact of innovation and entrepreneurship education to their development, and development of an intervention program that can be applied based on the findings of the study. A quantitative descriptivecorrelational research strategy was employed in this study. A random sampling strategy was used to choose a representative sample of 150 teachers. The study results indicate that the study's demographic highlights experienced teachers, predominantly aged 31-50, indicating substantial institutional knowledge. Female representation dominates, signaling increased gender diversity. The prevalence of Master's degrees underscores academic qualifications' significance. Teachers with 11-20 years of experience offer mentoring potential for entrepreneurial students, fostering further innovation in university education. Moderate effectiveness in management efficacy among teacher-respondents suggests a need for goalsetting improvements to advance innovation and entrepreneurship education. Positive perceptions of communication efficacy underscore teachers' effectiveness but highlight room for improvement in providing constructive feedback. Age-related differences in knowledge of innovation and entrepreneurship education highlight the importance of tailored interventions. Gender-neutral observations in teachers' assessments indicate the efficacy of gender-neutral initiatives. Faculty skills development impacts moderately, with potential improvements in student collaboration and orientation on emerging trends. Entrepreneurial mindset development scores moderate, emphasizing resilience instillation but signaling networking opportunity improvement. Age-related differences suggest tailored interventions to address diverse needs. Gender-neutral impacts indicate effective skill enhancement regardless of sex. Varied impacts across educational backgrounds necessitate tailored approaches for entrepreneurial mindset. Significant correlations between teachers' knowledge and professional development, utilizing the triple helix model focused on collaborative interaction between academia, industry, and government in fostering innovation and driving economic development, highlight the need for investment in training initiatives, driving positive changes in education and benefiting both teachers and students.

### INTRODUCTION

In recent years, the field of education has undergone significant shifts with the rapid development of technology, evolving social needs and increasing emphasis on the development of innovative and entrepreneurial skills for students. Due to the rise of globalization and knowledge economy, it has become



the consensus of the education field to cultivate college students with more innovative ability, practical ability and innovative and entrepreneurial spirit.

With the development of the traditional education mode, the traditional education mode has gradually changed from focusing on knowledge transmission and standardized evaluation to emphasizing innovation and solving practical problems. Such modern education mode forces the leaders of schools and educational institutions to adjust their leadership strategies to effectively control this changing new situation. The emergence of innovative entrepreneurship education for the education ecosystem introduced a new dynamic, has extensive and far-reaching influence on school leadership change, so it is necessary to evaluate school internal leadership methods, such as creating encourage students to participate in and autonomy environment, pay more attention to the needs of teachers and students and feedback, promote interdisciplinary cooperation and university-enterprise cooperation team culture, make full use of modern information technology to provide more learning resources and tools, adjust the leading role construction enterprise university, etc.

Innovation and entrepreneurship education in China has made remarkable progress in the past few decades, in order to cultivate innovative talents to meet the needs of modern society and promote economic development and social innovation. At the same time, under the influence of the popularization of higher education, the growth rate of the number of graduates is much greater than the growth rate of jobs, and the employment problem is increasingly prominent. In this context, China has rapidly launched innovation and entrepreneurship education to solve social problems and meet social needs. The Chinese government has gradually introduced a series of policies to support innovation and entrepreneurship education, encouraging college students to innovate and start businesses nationwide.

At the same time, Chinese universities also realize that the effective development of innovation and entrepreneurship education can effectively promote the reform of higher education itself and promote the improvement of education and teaching quality. Therefore, universities are also keen to participate in innovation and entrepreneurship education. In 1998, Tsinghua University held the first business plan competition for college students, which opened the prelude of innovation and entrepreneurship education in China. In 2015, the "Chinese University Innovation and Entrepreneurship Education Alliance" was established, which encouraged more universities to join the reform tide of innovation and entrepreneurship education. Colleges and universities across the country have carried out different attempts to reform innovation and entrepreneurship education. They have established distinctive innovation and entrepreneurship education and entrepreneurship education and entrepreneurship education and entrepreneurship education. They have established distinctive innovation and entrepreneurship education, organizing entrepreneurship competitions, and building incubation bases.

Facing the future, under the background of information technology revolution and economic globalization, the development paradigm centered on teaching and research is faced with severe challenges of innovation and entrepreneurship. The transformation of traditional education models driven by innovation and entrepreneurship education prompts school leaders to adjust their roles, strategies, and approaches to the changing educational needs and trends. Leaders need to actively promote these changes to ensure that schools can provide practical education and produce students adapted to the future society.

### Touching Base with international innovation and entrepreneurship education

Embarking on a journey through the realm of global innovation and entrepreneurship education, it is essential to delve deeper into the dynamic landscape of international initiatives, strategies, and advancements, especially those areas that can be treated as leaders in terms of the discipline. From



groundbreaking pedagogical approaches to cross-cultural collaborations, it is a must to navigate the everevolving terrain of knowledge exchange and empowerment in the pursuit of fostering innovation and entrepreneurial spirit across borders before delving into a more internal structure and system.

Due to early start, the innovation and entrepreneurship education of the United States, Germany, Japan and Singapore is more typical, in the innovation of entrepreneurship education guiding concept, operation mode, curriculum system and multiple subject cooperation has distinct characteristics: the innovative entrepreneurship education theory and practice the earliest, has formed a relatively perfect innovation entrepreneurship education system, not only set up special management institutions, equipped with strong teaching staff, and innovative entrepreneurship education curriculum system is perfect, innovative entrepreneurship education driving role of economic and social development.

In the 1980s, the federal education secretary of the US Terrell H. Bell issued an in vocational education pay attention to cultivate students' innovative entrepreneurial ability policy, which triggered a series of changes in vocational education, greatly promoted the development of innovative entrepreneurship education, the famous "American entrepreneurship education alliance" is established in this context. The purpose of the alliance is to realize resource sharing among various subjects by giving full play to their comparative advantages. Innovation entrepreneurship education and practice has become synonymous with American university, in addition to the familiar with the long history of MIT entrepreneurship center and promote the innovation in greater Boston entrepreneurial ecosystem development irreplaceable role, and many other famous universities are committed to building innovative entrepreneurial university. Stanford University has built a complete curriculum system in its years of innovation and entrepreneurship education practice, and always adheres to the three basic principles, namely, the combination of liberal arts and science, teaching and research, and the combination of professional education and innovation and entrepreneurship education. Many local universities and community college also innovation entrepreneurship education and practice as the fundamental mission of its development, and actively carry out innovative entrepreneurship education and practice activities. The American Entrepreneurship Education Association clearly points out that innovation and entrepreneurship is endless, and the concept of lifelong learning needs to be established. In the United States, elementary school, middle school, high school, universities and even graduate students. In addition, innovation and entrepreneurship education in the United States also emphasizes the organic combination with vocational education, requiring students to learn and master the necessary vocational skills at different stages according to their personal interests and hobbies.

Germany's innovative entrepreneurship education has typical measures to local conditions, according to their aptitude, universities can according to their own orientation and market demand to explore different innovation entrepreneurship education mode, students can choose different school according to interests and knowledge structure of the school, such as vocational training, vocational institutions of higher learning or comprehensive university. The innovation and entrepreneurship education in German universities is supported by the government and social organizations, especially the business community. According to Siemens, public, bayer and other well-known enterprises regularly held various forms of innovation creative competition, set up the company research subject, social public entrepreneurship projects form stimulate the enthusiasm of college students to participate in innovation dynamic, for college students to build various forms of innovation platform. Second, the German government has given generously to support the scarce funding problem for entrepreneurs. German university innovation



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entrepreneurship education mentor is given priority to with part-time teachers, most of them have rich experience, business management and successful career well-known entrepreneurs, generally as a lecturer to teach college students, the organic combination of innovation theory and entrepreneurial actual combat, according to the students' innovation accomplishment and entrepreneurial interests, give more targeted guidance and help. Compared with the college tutors, these part-time mentors from the industry can more accurately grasp the connotation and practice of innovation and entrepreneurship.

Although innovation and entrepreneurship education in Japan started late, it absorbed the essence of innovation and entrepreneurship education in the United States and integrated the advantages of European innovation and entrepreneurship education, forming a Japanese model with the main goal of "cultivating" entrepreneurial spirit ", which played an important role in promoting the economic development of Japan, especially the rise of advanced manufacturing industry. Innovation and entrepreneurship education in Japan has formed a coherent curriculum system from primary school to university. Innovation and entrepreneurship education at different levels is carried out for students at different stages. In the primary school, it focuses on the cultivation of students' entrepreneurial consciousness and creative thinking; in the middle school, it begins to contact the education of enterprise management; and further strengthens the education of enterprise management, and begins to receive more practical entrepreneurial knowledge and skills education. Through the phased and hierarchical innovation and entrepreneurship education courses, we can stimulate students 'entrepreneurial consciousness, cultivate students' entrepreneurial spirit, and help students to master the professional knowledge and skills necessary for entrepreneurship. Japanese innovation and entrepreneurship educators fully mobilize the government, universities, enterprises and other relevant subjects to participate in it, forming a unique "integrated", "multi-level", "different" innovation and entrepreneurship education curriculum system.

Singapore's innovation and entrepreneurship education attaches special importance to the integration of industry, education and research. A number of professional research institutions have been established in a university to undertake major national projects and directly serve the economic and social development. As early as 1959, the Singapore government clarified the guiding ideology of "developing practical education to meet the needs of industrialization and economic development", and later formulated the guiding principle of "education must cooperate with economic development" to oppose the blind development of higher education without the actual social needs or the pursuit of pure academic research. For example, the National University of Singapore attaches special importance to the marketization of innovation achievements, and has established the "University Innovation Network" and the University Entrepreneurship Center, aiming to promote innovation and entrepreneurship research and education on innovation and entrepreneurship, and support entrepreneurial teams to set up companies according to the innovation achievements, so as to form a complete industrial chain of scientific and technological innovation. Singapore universities generally take rich entrepreneurial experience and corporate management positions as the necessary conditions for hiring entrepreneurial mentors, which makes them maintain a keen sense of smell and a good grasp of the current entrepreneurial trends, future development trends and the potential market demand of innovation and entrepreneurship education. In order to meet the requirements of internationalization, Singapore universities have adjusted the innovation and entrepreneurship education courses, implemented a more flexible and pragmatic credit system, and opened international courses. Such as Nanyang Technological University for entrepreneurship and innovation management master of business operations and financing, business plan, enterprise operation management, sustainable leadership and strategic innovation courses, so as to build international vision,



international skills, familiar with foreign environment, cutting-edge knowledge of high level interdisciplinary talents.

### Innovation and Entrepreneurship in China

China's educational landscape has experienced a profound transformation in recent years. Rapid economic growth, technological advancements, and globalization have necessitated a shift from traditional education models towards more dynamic and innovative approaches. The recognition that students need to be equipped with not only academic knowledge but also practical skills, creative thinking, and an entrepreneurial mindset has led to the emergence of innovation and entrepreneurship education as a key component of the education system.

In December 2015, the Ministry of Education of China issued the Notice on The Employment and Entrepreneurship of the 2016 National College Graduates, again emphasizing the strengthening of innovation and entrepreneurship education, and requiring all universities to open compulsory courses and elective courses of innovation and entrepreneurship education for all college students from 2016, and incorporate them into the credit management. In September 2021, the Guidance of the General Office of the State Council on Further Supporting the Innovation and entrepreneurship of College Students (No.35,2021) pointed out that to enhance the innovation and entrepreneurship ability of college students, innovation and entrepreneurship education should run through the whole process of talent training; the teaching ability of teachers in innovation and entrepreneurship education should be enhanced and the training of college students should be strengthened.

The following are some of the main aspects of the development of innovation and entrepreneurship education in China: 1. Support of education policies: The Chinese government has gradually introduced a series of policies to support innovation and entrepreneurship education, encouraging schools and educational institutions to offer courses on innovation and entrepreneurship, so as to provide students with more opportunities to practice and innovate. 2. Establishment of innovation and entrepreneurship centers in universities: Many universities have set up innovation and entrepreneurship centers nationwide, providing students with innovation and entrepreneurship training, project incubation, entrepreneurship mentors and other support. 3. Curriculum reform: Many universities have introduced innovation and entrepreneurship elements into their courses, including innovative thinking, entrepreneurial case analysis and teamwork. Some schools also offer interdisciplinary courses for innovation and entrepreneurship. 4. Entrepreneurship practice base: The school provides students with a practice base for entrepreneurship, so that they can build and operate their own enterprises from scratch, and gain practical experience from it. 5. Innovation and Entrepreneurship Competition: Many innovation and entrepreneurship competitions are held in China, providing a platform for students to show off their ideas and innovation projects. These competitions can not only stimulate students' innovative potential, but also promote their cooperation with the business community. 6. International exchanges and cooperation: China's innovation and entrepreneurship education is also actively developing at the international level, and cooperating with universities, innovation centers and enterprises in other countries to promote transnational exchanges of innovation and entrepreneurship education. 7. Government-enterprise cooperation: Many universities cooperate with enterprises to provide internship and project cooperation opportunities to enable students to learn and practice in a practical entrepreneurial environment. 8. Research on Innovation and Entrepreneurship Education: More and more research institutions and scholars have begun to pay attention to the research on innovation and entrepreneurship education, and discuss its effects and effects from



different perspectives. As the education sector evolves, leadership within educational institutions must also adapt to the changing landscape. The traditional role of school leaders as administrators and managers is evolving into that of visionaries, change agents, and facilitators of innovation. The integration of innovation and entrepreneurship education adds a layer of complexity to leadership dynamics, requiring leaders to foster a culture of creativity, risk-taking, and adaptability.

All countries attach great importance to the orientation of innovation and entrepreneurship education in national education and integrate it into the whole process of talent training; properly handle the interest relationship between colleges, universities and government and enterprises to form an innovation and entrepreneurship education alliance involving multiple subjects; attach importance to the construction of compound teachers with rich practical experience; and organically integrate innovation and entrepreneurship education with professional education.

Although the researcher's home institution, Yichun University, is compliant with the aforementioned policies, along with other schools around the region, it must be highlighted that developments must be fostered and shared to those who not yet be compliant to improve not just those who are currently recognizing the aforementioned policies, but also those who are yet to do so, so that every institution can have an upward trajectory on the progress of their respective endeavors in the field of innovation and entrepreneurship education.

The importance of fostering developments and sharing knowledge about compliance with policies in institutions goes beyond the immediate impact on the organizations that are already adhering to them. It becomes imperative to create a collaborative environment where the experiences, best practices, and success stories of compliant institutions can be shared with those that may not have fully embraced these policies yet.

Yichun University, being one of the institutions in compliance, along with other universities with the same status, can play a pivotal role in spearheading initiatives to disseminate information and facilitate a dialogue among various educational institutions in the region, and at the same time, improve themselves by picking up lessons as they share their craft.

Moreover, it is crucial to emphasize the broader societal benefits of promoting compliance with these policies. By fostering a culture of innovation and entrepreneurship in education, institutions contribute not only to their own growth but also to the overall development of the community and the nation at large. This can lead to a more skilled and adaptable workforce, increased economic competitiveness, and a higher likelihood of success in addressing contemporary challenges.

In this era of rapid technological advancements and globalization, collaboration among institutions becomes instrumental in staying relevant and effective. Yichun University, as a compliant institution, can serve as a mentor to others, providing guidance on the practical steps, challenges, and opportunities associated with aligning with innovation and entrepreneurship education policies. By sharing experiences and lessons learned, institutions can collectively contribute to the evolution and refinement of these policies, ensuring they remain dynamic and responsive to the evolving needs of the educational landscape. Furthermore, it is essential to acknowledge that the journey towards compliance is not always straightforward. Different institutions face unique challenges and constraints, ranging from resource limitations to cultural barriers. Yichun University, by fostering an open dialogue, can help identify common obstacles and work collaboratively towards finding innovative solutions. This approach not only benefits individual institutions but also contributes to the overall advancement of the ecosystem in the region.



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The commitment to fostering developments and sharing knowledge about compliance with innovation and entrepreneurship education policies is a shared responsibility. Yichun University, along with other compliant institutions, has an opportunity to lead by example, promoting a collaborative and supportive environment that benefits both the institutions already recognizing these policies and those that are on the journey towards compliance. Through such collective efforts, the entire educational landscape can experience positive transformations, leading to a more innovative, adaptive, and prosperous future.

This study aimed to explore the evolving role of school leadership in innovation and entrepreneurship education. Modern universities have changed greatly in both scale and structure, Daniel Bell once pointed out in his book *The Coming of Post-Industrial Society*, just as commercial companies have become the core institutions of society in the past century due to their function of organizing mass production, universities (or other forms of knowledge institutions) may become the new source of invention and knowledge in the next century". Due to the rapid development of economy and science and technology, a lot of university's policies and rules of conduct have not kept pace with their own development, and if they continue to use the old methods, they become difficult to control and manage. Therefore, university leaders must take action to update the old governance concepts and organizational forms, and rebuild the new organizational structure and leadership paradigm centered on innovation and entrepreneurship. As educational institutions increasingly incorporate these concepts into their curricula, it is critical to understand how effectively school leadership can adapt to support and drive these changes. The study focuses on elucidating the complex relationships between innovation, entrepreneurship, and leadership, providing insight into how leaders can use these trends to improve educational institutions and students.

### Perspectives on Innovation and Entrepreneurship Education

The concept of innovation and entrepreneurship education originated in China, Innovation education and entrepreneurship education are originally two independent concepts, and innovation education is a kind of educational concept and mode that guide students to cultivate innovative consciousness, innovative spirit and creative thinking. Entrepreneurship education is an educational mode that guides students to engage in business practice. Its purpose is to transform students from passive job seekers to job creators. In 2010, the Ministry of Education of China issued the Opinions on Vigorously Promoting Innovation and Entrepreneurship Education in Higher Education and College Students, which combined the two concepts into one and pointed out that " innovation and entrepreneurship education is a teaching concept and mode that conforms to the needs of economic society and national development strategy." This is a bold integration and transcendence of innovation education in western countries and combined with China's national conditions.

The Innovation and entrepreneurship education is not a simple superposition of entrepreneurship education and innovation education. Although there is a close connection between innovation education and entrepreneurship education, they are not completely consistent and cannot be replaced by each other. Innovation education pay more attention to the training of thinking, entrepreneurship education more to behavior. Innovative entrepreneurship education is from the spiritual quality, way of thinking, knowledge, skills, behavior, attitude and life philosophy each latitude to shape people, make innovation education and entrepreneurship education organic combination become inseparable, mutual fusion of a new type of education. In essence, it surpasses the traditional innovation



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education and entrepreneurship education in terms of concept and content. Its core value orientation is to cultivate students' innovative spirit, entrepreneurial consciousness and entrepreneurial ability.

Conducting innovation and entrepreneurship education is to respond to China's economic and social growth trends. In the global information and communication age, talent rivalry has progressively emerged as the dominant international competition. Talent becomes an important aspect in adopting innovationdriven initiatives. Present Xi stated that China must lead the world in scientific and technological innovation. We must identify talents in creative practice, cultivate skills in innovative activities, and pool talents in innovative endeavors. Significant efforts must be made to generate new concepts that are large-scale, well-structured, and use high-quality science and technology workers. Currently, fostering inventive abilities has become a critical measure for improving the potential of independent invention. Universities, being the primary source of talent production, have failed to meet the requirements for creating a creative nation. As a result, only by vigorously promoting innovation and entrepreneurship education at higher education institutions, as well as cultivating more high-level talents with innovative entrepreneurship, can we provide talent support for the implementation of the national innovation system and eventually build an innovation-oriented nation (Wang, 2016).

Delivering innovation and entrepreneurship education is also tailored to universities' self-development needs. It has become the most critical and urgent duty of higher education to engage in comprehensive education reform and increase the quality of competent individuals. Nowadays, teaching at universities is still heavily focused on rushing and embedding teaching approaches. Students do self-exploration, and there is limited opportunity for debate. Education ought not to be instilled blindly. The main objective of education is supposed to be to ignite each student's potential, create a drive for active learning, and instill a love for invention. Innovation and entrepreneurial education are key to the transformation in conventional employee instruction modes, creative teaching techniques, and educational material, with a focus on cultivating individual capacity as well as excellence rather than pure information. In the teaching process, innovation and entrepreneurship education promotes interaction between teachers and students, not just imparting fundamental information but also incorporating study into the classroom. As a result, providing innovation and entrepreneurship education in universities and colleges helps college students build a positive professional view while also recognizing their own ideals in order to contribute to socialist modernization. It also promotes college students' learning initiative and entrepreneurship, cultivates their entrepreneurial passion, and improves the overall quality of college students (Li, 2016). As a result, emphasizing on innovation and entrepreneurial education in universities and colleges is critical to improving teaching quality and promoting educational growth in China.

However, there are several challenges in the aforementioned sector. The innovation and entrepreneurship education system at universities is in its early stages, and teaching techniques are generally straightforward. Some universities have not paid enough attention to the development of an innovation and entrepreneurship education curriculum, have not established a wealth of courses related to innovation and entrepreneurship education, and the teaching process does not utilize intended teaching materials, only one-sided references to college students' career guidance class teaching materials, making it impossible to achieve the fundamental goal of innovation and entrepreneurship education. Also, some teaching techniques for innovation and entrepreneurship education at universities and colleges are very conventional and one-dimensional, with "classroom teaching" taking up the majority of teaching time and providing little practical training. The lecture's subject is confined to knowledge gained from books. "Spoon-feeding" instruction might continue to be the primary method of instruction, with less engagement



with students, students' capacity to address practical issues not being moderated, and students' efforts and ideas not being adequately nurtured (Liu, 2017).

Teachers of innovation and entrepreneurship education at Chinese universities and colleges are insufficient. Innovation and entrepreneurship education in Chinese universities and colleges dates back less than a decade. The talent pool fails to be enough. There is still a significant difference between the level of expertise and industrialized countries. More shortcomings exist in terms of both the amount and quality of instructors.

Based on an empirical standpoint, colleges are unable to engage professionals in this sector to provide innovation and entrepreneurship coaching to students owing to a lack of financial and material resources, as well as other difficult situations. Some colleges explicitly appoint instructors in charge of recruiting students to teach, and some institutions even hire professors of management, economics, and other professional disciplines to teach innovation and entrepreneurship. This has resulted in the absence of any specialized educational and academic team in universities, and the fact that more schools use a multifaceted vastly communal teaching technique that cannot arrange a handful of exchanges or individualized instruction, which is also constrained by the numbers of the faculty roster (Yan, 2017).

Additionally, instructors' professionalism needs to be increased. On the one hand, the teachers lack systematic professional training, have no thorough and systematic understanding of their own reserves, and are not very professional. On the other hand, instructors lack the required entrepreneurial experience. Most professors lack business experience and are confined to theoretical knowledge, as well as some entrepreneurial abilities, making it difficult for them to provide useful advise to students when faced with practical challenges. at other words, a shortage of innovation and entrepreneurship education professors at universities, a lack of professionalism, and other factors have hampered the growth of China's innovation and entrepreneurship education.

Furthermore, the education paradigm for innovation and entrepreneurship at Chinese universities and colleges is not optimal. Some Chinese institutions have yet to address the subject of innovation and entrepreneurship education for students, and they lack a comprehensive and systematic training model for innovation and entrepreneurship. Students are solely interested in graduation credits, additional optional courses and lectures, student club activities, and other informal forms of instruction. At the same time, the proportion of credit hours and credit hours in innovation and entrepreneurship education remains low when compared with more higher-level matters, the degree of collaboration with other disciplines requires improvement, and there is a dearth of a thorough and structured educational system (Zhong, 2016).

### Innovation and Entrepreneurship Education and its Advancement in the Academic Field

The United States is the first country to conduct research on innovation and entrepreneurship education. In the 1980s, the United States began to pay attention to and study higher education innovation. In 1983, American education sociologist Henry Etzkowitz published a paper titled "Entrepreneurial Scientists and Entrepreneurial University" in American Academic circles, which put forward the concept of entrepreneurial university for the first time. In 1995, Henry Etzkowitz publish thesis "The Triple Helix of University-Industry-Government Relations: A Laboratory for Knowledge-Based Economic Development", he proposed the famous **triple helix model** together with Professor Leydesdorff, which is the mainstream model to analyze the relationship among universities, government and enterprises. They use the principle of biology explained in the development of knowledge economy university, the interdependent interaction between government and enterprises, and think under the background of



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knowledge economy, university, government and enterprises should coordinate with each other, to promote the production of knowledge, transformation, application and upgrade, promote system in the process of the interaction. In his book *Triple Helix*, he summarizes the five characteristics of entrepreneurial university: knowledge capitalization, interdependence, relative independence, mixed formative and self-reactivity, which opened the prelude of entrepreneurial university research. In his another book *MIT and the Rise of Entrepreneurial Science*, he said that "in the process of combining teaching and research with knowledge capitalization, a new university model —— entrepreneurial university was born. Taking on the role of entrepreneurship is the latest step in the evolution of medieval institutions, from its initial function of preserving knowledge to the subsequent function of disseminating and capitalizing knowledge. By producing social capital, intellectual capital and human capital, the university has increased its fundamental role in economic development, and is becoming the axis organization of modern society".

American higher education scholar Burton R. Clark published published the book *Building an Entrepreneurial University (Organizational Transformation)* in 1998. He proposed that the transformation of entrepreneurial university needs five elements, including a strong control core, the expansion of the periphery, the diversified capital base, the activation of academic heart, and the integration of entrepreneurial culture. His 2004 book *Continued Change in Universities, — New Cases and New Concepts of Entrepreneurial Universities,* demonstrates his view that" strong leadership and successful cultural ideas drive the extension of these entrepreneurial transformations " from an international comparative perspective. After in-depth analysis, Clark believes that the continuous transformation of entrepreneurial universities requires three dynamic factors: " the interaction and support between the transformation factors, the establishment of forward-looking continuous motivation, the institutional will and collective will to stimulate and guide a force of self-preservation and self-choice to adapt to the needs of the society."

Elizabeth Popp Berman, Professor of Organizational Studies and Sociology at the University of Michigan, discussed the topic of innovation-driven economy in her first book *Creating the Market University: How Academic Science Became an Economic Engine*, and suggests that the transformation of entrepreneurial universities is from the outside to the inside, rather than the proactive actions of universities and their leaders.

Chinese scholars interpreted the connotation of innovation and entrepreneurship education from different perspectives. Zhao Feng (2018)believe that innovation and entrepreneurship education is a process of cultivating talents with both innovative spirit and entrepreneurial practical ability. Yang Dong (2021) believe that innovation and entrepreneurship education belongs to a new type of university education concept, model and form. Shi Li (2021)also believe that college innovation and entrepreneurship education is a new educational concept to cultivate college students' awareness of innovation and entrepreneurship, thinking mode and innovation ability.

In 2016, it was proposed that the foundational value orientation of innovation and entrepreneurship education lies in cultivating students' innovative spirit, entrepreneurial consciousness, and entrepreneurial abilities (Li, 2016). He argued that to advance innovation and entrepreneurship education, it is imperative to effectively integrate it with professional education. Focusing on stimulating students' interest in learning and developing their practical abilities, Wang Yanxin (2015) identified this as a crucial aspect of innovation and entrepreneurship education. Yang Xiao-hui (2015) critiqued traditional entrepreneurship education for two common errors: excessive narrowness confined to "entrepreneur education" and overly

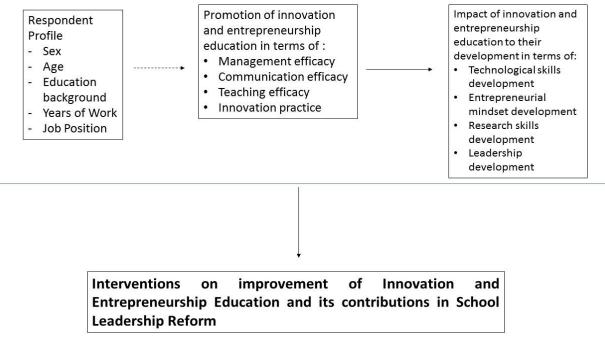


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broad generalization categorized as "quality education." She advocated positioning entrepreneurship education to cultivate "innovative talent," defining it as individuals with a robust innovation consciousness, innovative spirit, and the capacity to contribute to society through innovative endeavors. To enhance the cultivation of innovative talents, Yang stressed the integration of college entrepreneurship education with innovative education, industrial education, and career education. Emphasizing the need for innovation and entrepreneurship education to shape personalized talents with an international perspective, Wang Hongcai (2016) highlighted individuals excelling in collaboration, possessing a scientific approach to problem-solving, and consistently innovating and breaking through boundaries. The crucial element in this process, according to Wang, is the cultivation of students' independent judgment abilities. Pointing out the absence of a cohesive entrepreneurship education system connecting universities, primary, and secondary schools, Wang Zhanren (2015) argued that innovation and entrepreneurship education in higher education. Within this framework, he underscored the importance of cultivating talents with a positive life attitude, an entrepreneurial consciousness daring to transcend tradition and self, and the ability to translate knowledge into skills and consciousness into action.

Chinese scholars generally pay attention to the concept and system construction of innovation and entrepreneurship education, how to integrate innovation and entrepreneurship education into the school education system to ensure its consistency with the overall development goals of the school, how to design innovative entrepreneurship courses to cultivate students' innovative thinking, entrepreneurial skills and practical ability, while focusing on how to integrate interdisciplinary knowledge into the curriculum. However, there are problems that innovation and entrepreneurship education is too theoretical and lack of practical operation, and it is difficult for students to apply the knowledge to the actual innovation and entrepreneurship practice; the evaluation system of innovation and entrepreneurship education may not be perfect, and how to accurately evaluate students' innovation and entrepreneurship ability and accomplishment is a challenge. These priorities and deficiencies reflect the concerns of scholars in the field of innovation and entrepreneurship education, and also provide useful ideas for improving innovation and entrepreneurship education. Innovation and entrepreneurship education is valued for its potential to equip students with basic skills to cope with a rapidly changing global landscape. Research has shown that such education can foster students' creativity, problem-solving skills and a proactive attitude. Scholars emphasize that the effective integration of innovation and entrepreneurship education relies on ideal leadership that combines educational goals with real-world needs.





## Figure 1. Research Paradigm

Following the research paradigm, it is crucial to delve into the intricate details of how these assessments shape the formulation of a comprehensive program. The amalgamation of insights derived from the assessment of respondents' knowledge and promotion of innovation and entrepreneurship education in Part 2 (Assessment on Promoting Innovation and Entrepreneurship Education), coupled with the examination of the impact of such education on the development of faculty members in Part 3 (Assessment on Impact of Innovation and Entrepreneurship Education to Faculty Skill Development), provides a rich foundation for informed decision-making.

In Part 2, where respondents' assessments on the knowledge and promotion of innovation and entrepreneurship education were measured, the obtained profiles likely encapsulate a spectrum of perspectives, experiences, and attitudes. These profiles serve as invaluable benchmarks, offering a nuanced understanding of the existing landscape within the institution. Analyzing the differences among these profiles unveils areas of strength and potential areas for improvement, pinpointing specific aspects that may require targeted interventions.

Moving on to Part 3, the exploration of the impact of innovation and entrepreneurship education on the development of faculty members delves into the tangible outcomes and transformative effects of such educational initiatives. This section likely yields a mosaic of responses, highlighting success stories, challenges faced, and areas where the impact could be enhanced. The differences identified here provide crucial insights into tailoring strategies that align with the diverse needs and experiences of faculty members.

Recognizing the to-be results from both parts not only aids in understanding the current state of innovation and entrepreneurship education within the institution but also lays the groundwork for a strategic program. The identified differences and relationships among variables become pivotal inputs for formulating a program that not only addresses the challenges identified but also leverages the strengths uncovered in the assessment.

The ultimate goal is to create a program that not only fosters an innovation and entrepreneurship culture within the institution but also ensures continuous development, with a special emphasis on the growth of



teachers. This program should be dynamic, responsive, and aligned with the unique profile of the institution, catering to the specific needs and aspirations of both faculty members and the broader community.

This study looked into the impact of innovation and entrepreneurship education on faculty skills development, the answer to the following aspects questions were sought:

- 1. What is the respondents' profile based on:
- 1.1. Age
- 1.2. Sex
- 1.3. Years of work
- 1.4. Job Position
- 2. What is the assessment of respondents in promoting innovation and entrepreneurship education in terms of:
- 2.1. Management Efficacy
- 2.2. Communication Efficacy
- 2.3. Teaching Efficacy
- 2.4. Innovation Practice
- 3. Is there significant difference on the assessment of respondents on their knowledge of innovation and entrepreneurship education to promote change and innovation in practice?
- 4. What is the assessment of respondents on the impact of innovation and entrepreneurship education to their development in terms of:
- 4.1. Faculty Skills Development
- 4.2. Entrepreneurial Mindset Development
- 4.3. Research Skills Development
- 4.4. Leadership Development
- 5. Is there a significant difference on the assessment of respondents on the impact of innovation and entrepreneurship education?
- 6. Is there a significant relationship between the respondents' assessments on their knowledge of innovation and entrepreneurship education to promote change and innovation in practice and the impact of innovation and entrepreneurship education to their development?
- 7. What intervention/s can be applied based on the findings of the study?

## METHODOLOGY

## **Research Design**

A quantitative descriptive-correlational research strategy was employed in this study. It is a systematic technique to investigating the relationship between variables while offering a full overview of the study issue. This research strategy would stress numerical data gathering and analysis in the context of this investigation.

The quantitative part of this study design would entail the use of surveys or questionnaires to collect structured data from various stakeholders at Yichun University, Yichun Vocational Technical College, Yichun early childhood teachers college. These surveys would contain questions about education in innovation and entrepreneurship, leadership styles, faculty skills development and their perceived impacts. To summarize and present the properties of these variables, descriptive statistics such as means and



standard deviations would be used. For example, the mean ratings for faculty skills development and innovation practice might give a sense of the university's general opinion.

When investigating relationships between variables, the correlational component would come into play. Researchers might look at if there is a link between school administrators' leadership styles, faculty skills development and the amount of innovation practice among staff and students. The strength and direction of these correlations would be determined using Pearson's correlation coefficient or other relevant statistical tests. This quantitative analysis would aid in the identification of patterns and relationships in the data.

The combination of descriptive and correlational data would allow for a more in-depth examination of the research issue. Researchers might offer descriptive summaries of key characteristics like leadership effectiveness and innovation practice, and then connect these with other variables like entrepreneurial mindset growth. This integrated research would give a more nuanced view of how Yichun campus's leadership styles influence innovation and entrepreneurship teaching, as well as the possible consequences for the campus community.

A quantitative descriptive-correlational study methodology is used to investigate the association between innovation and entrepreneurship education and faculty skills development at Yichun University, Yichun Vocational Technical College and Yichun early childhood teachers college. Researchers can present a quantitative summary of the issue while detecting statistically significant links by using surveys, descriptive statistics, and correlational studies. This strategy provides useful insights for educational leaders and policymakers, assisting in the formulation of evidence-based initiatives for improving university innovation and entrepreneurship education.

## Sampling and Research Locale

A random sampling strategy was used to choose a representative sample of 150 teachers. A list of all Yichun University, Yichun Vocational Technical College, Yichun early childhood teachers College's Innovation and Entrepreneurship teachers may be collected, and then a random sample of 150 teachers can be chosen using the Qualtrics calculator. This assures that each teacher has an equal opportunity to be included in the research, reducing bias.

At the same time, adhering to ethical principles and protecting the privacy of participants is indispensable and was given great consideration. Hence, it is important to note that the respondents may withdraw any time before, during or after the data collection process. This study was be done in the second semester of school year 2023-2024.

The study was conducted at Yichun University (YU), Yichun Vocational Technical College and Yichun early childhood teachers College .

Yichun University is a comprehensive university that was founded in 1958. It is located in Yichun City, Jiangxi Province, China, and was founded in January 2000 by the merger of Yichun Teachers College, Yichun Medicine College, and Yichun Agriculture College, with the agreement of the Ministry of Education.

YU now contains 19 schools, 6 institutes, over 50 undergraduate programs, and two linked hospitals. The Degree Committee of the State Council of China permitted YU to bestow a master's degree majoring in pharmacy in 2011, indicating that YU's educational quality has been elevated to a higher level. Currently, it houses 19,000 students, 100 innovation and entrepreneurship teachers and about 1500 teachers.



Yichun Vocational Technical College is located in the ancient city Yichun . It covers an area of 999,000 square metres with a construction area of 580,000 square meters. It has 8 secondary colleges and 5 teaching units, more than 18,000 students, 842 staff, including 220 deputy senior titles and about 100 innovation and entrepreneurship teachers.

The history of Yichun early childhood teachers College can be traced back to 1906. Over the past 110 years, it has trained more than 60,000 graduates from established. It is the first public early childhood college in Jiangxi Province and the earliest in China. The university has 9 colleges and nearly 30 majors. There are more than 13,000 full-time students, more than 600 full-time and part-time teachers, and more than 80 innovation and entrepreneurship teachers.

Jiangxi Province's campus is located towards the west. Yichun is one of the first corps of national experimental ecological cities, and it has received several national honors, including National Designated Garden City, National Model City for Greening, China Excellent Tourist City, and National Health City. YU has beautiful scenery, easy communication, abundant facilities, deep cultural heritage, and fairly sophisticated teaching circumstances. Meanwhile, students can take use of the Zhe-Gan Railway (which connects Zhejiang and Jiangxi) and the Mingyue Mountain airport.

### **Research Instrument**

This research employed a researcher-made questionnaire survey to comprehensively investigate the impact of innovation and entrepreneurship education on faculty skill development.

The questionnaire served as the primary research instrument, divided into three main parts: Part 1 captured information such as age, gender, educational background, and years of experience. This data provides context for understanding respondents' backgrounds and any potential influences on their perceptions and experiences. Part 2 evaluated respondents' understanding of innovation and entrepreneurship education. Utilizing a mix of Likert-scale, multiple-choice, and open-ended questions, this section probes the depth and breadth of their knowledge, including key concepts and the relevance of this education in their respective fields. Part 3 assessed the perceived impact of innovation and entrepreneurship education on the personal and professional development of respondents. It examined areas such as critical thinking, problem-solving skills, creativity, and readiness for entrepreneurial endeavors. Respondents rate the extent to which this education has influenced their development.

The questionnaire survey data is quantitatively examined to detect trends, patterns, and statistically significant associations. Part 1 demographic factors are utilized to categorize respondents, and their responses to Parts 2 and 3 are evaluated within these categories, providing insight into potential demographic implications on knowledge and perceived impact.

The questionnaire surveys were carried out utilizing a properly constructed set of questionnaires, made by the researcher, that are matched with the study's research aims and constructs. A pilot test with a small sample of participants is undertaken prior to distribution to refine and confirm the clarity and relevance of the questions. The same questionnaires were also validated by respective experts on the field. Once completed, the surveys were given to the identified participants, emphasizing the importance of their replies. The information gathered through these surveys were submitted for quantitative analysis, which includes frequency and percentage estimates, as well as statistical tests to find trends and linkages.

### **Statistical Treatment of Data**

The results of the questionnaire were reviewed and analyzed through: Frequency and percentage. This



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information was utilized to characterize participant profiles by gender and department, as well as instructor participant profiles by gender, highest level of education, and years of teaching experience. These methodologies were used to evaluate the concerns and challenges that teacher participants face when developing organizational culture in educational leadership. Weighted average. This was used to assess both the level of leadership in teacher education and the development of organizational culture. A fourpoint Likert scale was used to interpret the means. Standard Deviation. It is a statistic that indicates the average deviation between all of the values in a collection and the data's mean value. The variable measure is most typically used while acquiring interval data. This holds true for all other statistical indicators used in this study. t-test is a parametric analysis that compares the variability of the means of two sets of parameters. Because dependent data were received from only one set of respondents, the independent ttest (Nieswiadomy, 2007) was utilized in this study, which is used when scores or values are related or have some connection. This test was used to determine whether the study's basic hypothesis was correct. Analysis of Variance. This test was used to investigate the significance of variations in the perception and evaluation of research participants on the subject of this study when they were classed based on their individual profiles. Pearson's Product Moment of Correlation. This test was carried out to see whether there is a relationship between the variables reported in this study. Statistical approaches such as frequency and percentage, weighted mean, standard deviation, and t-test were used to analyze the data. The data's significance level was set at 0.05. If the calculated value was larger than the 0.05 significance criteria, the null hypothesis was accepted; otherwise, it was rejected.

## **Ethical Considerations**

While conducting this study, the researcher recognizes the importance of upholding ethical standards throughout the research process. Hence, the following ethical considerations were addressed:

*Conflict of Interest.* The researcher transparently disclosed any potential conflicts of interest related to the topic, such as affiliations with specific universities or organizations within China's education system. This ensures the objectivity of the research despite any personal or professional connections.

*Privacy and Confidentiality.* The researcher is committed to safeguarding the privacy and confidentiality of participants, including faculty members, administrators, and students, from the universities under study. Measures were implemented to anonymize data and protect sensitive information, ensuring that individuals' identities and institutional affiliations remain confidential.

*Informed Consent Process.* Participants from China universities were fully informed about the purpose, procedures, risks, and benefits of the study before providing consent. The researcher provided clear and culturally sensitive consent forms, ensuring that participants understand their rights and the implications of their participation in the research.

*Vulnerability and Possible Risk.* The researcher considered the potential vulnerabilities of participants within China's educational context, such as faculty members facing career pressures or students navigating academic expectations. Steps were taken to minimize any risks associated with participation, prioritizing the well-being and autonomy of all participants.

**Recruitment.** Participants were recruited from a diverse range of China universities in a fair and transparent manner. The researcher avoided exerting undue influence and ensure that participation is voluntary, respecting the unique institutional dynamics and cultural sensitivities of each university community.



*Assent.* When involving participants who may have limited autonomy, such as students under academic supervision, the researcher obtained assent from the individuals themselves, while also seeking informed consent from relevant authorities within the universities.

*Benefits.* The researcher communicated the potential benefits of participating in the study to participants, highlighting how insights gained from the research could inform improvements in innovation and entrepreneurship education, as well as faculty skills development, within China universities.

*Compensations, Incentives, and Reimbursements.* If offering any form of compensation, incentives, or reimbursements to participants, the researcher ensured that these are culturally appropriate and respectful of local norms, avoiding undue influence on participants' decisions to take part in the research. However, to ensure there was no bias in the responses in this study, none of the aforementioned were given.

*Community Considerations.* The researcher considered the broader impact of the research on the Chinese university community and society as a whole. Efforts were made to ensure that the research aligns with the priorities and values of China universities, and that any findings contribute positively to the advancement of innovation and entrepreneurship education and faculty skills development within the country.

## Conclusions

- The study's demographic highlights experienced teachers, predominantly aged 31-50, indicating substantial institutional knowledge. Female representation dominates, signaling increased gender diversity. The prevalence of Master's degrees underscores academic qualifications' significance. Teachers with 11-20 years of experience offer mentoring potential for entrepreneurial students, fostering further innovation in university education.
- 2. Moderate effectiveness in management efficacy among teacher-respondents suggests a need for goalsetting improvements to advance innovation and entrepreneurship education. Positive perceptions of communication efficacy underscore teachers' effectiveness but highlight room for improvement in providing constructive feedback. While collaboration among teachers scored high, practical application and student self-efficacy require attention to enrich teaching practices. Acknowledgment of students' ideas is strong, but expanding ideas and providing practical training need enhancement to foster student success in entrepreneurship.
- 3. Age-related differences in knowledge of innovation and entrepreneurship education highlight the importance of tailored interventions. Gender-neutral observations in teachers' assessments indicate the efficacy of gender-neutral initiatives. Varied approaches to innovation practice across educational backgrounds suggest targeted strategies for enhancing entrepreneurial mindset. Career-stage impacts emphasize tailored initiatives for entrepreneurial mindset development and universal skill enhancement.
- 4. Faculty skills development impacts moderately, with potential improvements in student collaboration and orientation on emerging trends. Entrepreneurial mindset development scores moderate, emphasizing resilience instillation but signaling networking opportunity improvement. Research skills development impacts moderately, with collaboration enhancement being pivotal for rigorous student research. Leadership skills development significantly impacts, highlighting the importance of mentorship opportunities for students.
- 5. Age-related differences suggest tailored interventions to address diverse needs. Gender-neutral impacts indicate effective skill enhancement regardless of sex. Varied impacts across educational



backgrounds necessitate tailored approaches for entrepreneurial mindset. Career-stage impacts underscore the importance of tailored initiatives for entrepreneurial mindset development.

6. Significant correlations between teachers' knowledge and professional development, utilizing the triple helix model focused on collaborative interaction between academia, industry, and government in fostering innovation and driving economic development, highlight the need for investment in training initiatives, driving positive changes in education and benefiting both teachers and students

### Recommendations

- 1. Introduce mentorship programs pairing experienced teachers with students to leverage institutional knowledge; promote gender diversity and awareness in innovation and education by providing tailored professional development experiences for educators.
- 2. Offer training sessions focusing on goal-setting to enhance management efficacy. Develop workshops to improve feedback delivery skills and practical application of taught concepts. Implement mentorship opportunities for teachers to enhance innovation practice.
- 3. Tailor interventions to address age-related differences in innovation education. Implement genderneutral initiatives and specialized training programs for educators with diverse backgrounds. Develop career-stage specific initiatives to support educators effectively.
- 4. Enhance faculty skills development with modules on student collaboration and networking opportunities. Strengthen research skills development by promoting collaboration between teachers and students. Develop mentorship programs to enhance students' leadership skills.
- 5. Tailor interventions to address age-related differences in knowledge and perceptions of innovation education. Implement gender-neutral initiatives and specialized programs for educators with diverse backgrounds. Provide career-stage specific initiatives for educators.
- 6. Invest in comprehensive teacher training and professional development in innovation education. Establish mentorship programs and collaborative initiatives with industry partners to enhance real-world experiences. Prioritize ongoing support and guidance for teachers to foster continuous growth.

# Proposed Program for the development of interventions on improving innovation and entrepreneurship education and faculty skills

The findings of the investigation highlight the critical importance of implementing comprehensive strategies to enhance leadership qualities within the realm of innovation and entrepreneurship education. This underscores the need for educators to not only possess specialized knowledge but also cultivate key personal characteristics and pedagogical philosophies. Therefore, a holistic approach to leadership development is imperative for effective resource management and the achievement of educational objectives. With this in mind, the proposed program aims to achieve the following objectives:

- Conduct a comprehensive assessment to identify existing strengths and areas for growth in innovation and entrepreneurship education among faculty and administrators.
- Develop and implement tailored professional development programs for both faculty and administrators to enhance their understanding of innovation and entrepreneurship principles and practices.
- Create collaborative workshops and training sessions where faculty and administrators can learn together and exchange ideas on integrating innovation and entrepreneurship into the academic environment.



- Provide resources and support for faculty and administrators to develop innovative curricula, programs, and initiatives that promote entrepreneurship education across the institution.
- Foster cross-departmental collaboration and interdisciplinary approaches to innovation and entrepreneurship education by facilitating communication and partnership opportunities among faculty and administrators.
- Establish mentorship programs where experienced faculty and administrators can support and guide their peers in developing and implementing effective strategies for innovation and entrepreneurship education.
- Encourage administrators to provide institutional support and resources for faculty-led initiatives and projects related to innovation and entrepreneurship education.
- Create opportunities for faculty and administrators to engage with external partners, such as industry leaders, entrepreneurs, and community organizations, to gain insights and expertise in innovation and entrepreneurship.
- Implement mechanisms for evaluating the impact of faculty and administrator development programs on student learning outcomes, institutional culture, and community engagement.
- Continuously assess and adapt faculty and administrator development initiatives based on feedback, emerging trends, and evolving needs within the institution.

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