



Research on Comprehensive Evaluation of Innovation and Entrepreneurship Practice Platform for College Students

Jiujiu Yu¹(✉), Jishan Zhang¹, Ning Wu¹, and Li Liu²

¹ School of Computer Engineering, Anhui Sanlian University, Hefei, China
yjyjL@163.com

² School of Humanities and Law, Hefei University of Economics, Hefei, China

Abstract. For the purpose of contributing to innovation and entrepreneurship practice platform construction to improve college students' engineering practice ability, innovation and entrepreneurship ability and team cooperation spirit positively, the research is devoted to designing of a feasible and scientific evaluation standard system which emphasis on ideological and political education and school-enterprise collaborative innovation particularly. As an example of innovation and entrepreneurship practice platform of software engineering major in Anhui Sanlian University, the evaluation standard system is fully applied and feedback is positive. Furthermore, further work of improvement of safeguard measures for student teams and establishment of assessment indicators of cooperation with other practice platforms off campus in this evaluation standard system is put forward in the future.

Keywords: innovation and entrepreneurship practice platform · software engineering · school-enterprise collaborative innovation · comprehensive evaluation · evaluation standard system

1 Introduction

With the development of new engineering, college students encounter unprecedented opportunity and challenge, and it is indispensable to create favorable platforms for college students to carry out innovation and entrepreneurship practice activities [1]. "Public entrepreneurship and innovation" has become a major strategic measure to promote the sustainable development of our country's economy, as the starting point of college students' entrepreneurship, colleges and universities play a significant role, which assume more responsibilities in the process of cultivating innovative and entrepreneurial talents. Improving innovation practice education in colleges and universities, which constructs of a scientific and effective innovation and entrepreneurship practice platform is an effective way to cultivate college students' innovative spirit and innovation ability, and it is also an inevitable requirement for reforming the talent training mode. Existed studies of construction of innovation and entrepreneurship practice platforms in recent ten years are demonstrated in Table 1.

© The Author(s) 2023

X. Yuan et al. (Eds.): ICEKIM 2023, AHCS 13, pp. 581–590, 2023.

https://doi.org/10.2991/978-94-6463-172-2_62

Table 1. Results of Existed Studies

<i>Innovation and entrepreneurship practice platform</i>	<i>Keywords</i>
Practical platform for undergraduate students in application oriented universities based on “Trinity” [2]	innovation and entrepreneurship; cooperative effect
Innovation and entrepreneurship practice platform for college students under the background of “Internet+” [3]	Internet+ ; innovation and entrepreneurship for college students
Multidimensional practice platform of electronic information specialty in cultivating innovation ability of college students [4]	enterprises;innovation ability
Comprehensive practical platform of innovation and entrepreneurship education for engineering college students [5]	innovative and entrepreneurship education; creative talents training
Innovation and entrepreneurship of college students [6]	innovative and entrepreneurship education; talent training; comprehensive quality
Creation technology of innovation and entrepreneurship practice platform for college students [7]	innovative undertaking
Innovation and entrepreneurship practice platform for private college students [8]	private college; innovation and entrepreneurship
Investigation and practice on platform for undergraduate students’ innovation and practice [9]	innovative and practical platform self-management; talent training
Scientific and technological innovation practice platform for independent college students [10]	scientific and technological innovation; awareness of science and technology; spirit of innovation

These studies above have made certain theoretical contributions to content, goal, operating mechanism and performance for platform construction. However, there are still significant deficiencies in research. Firstly, lack of research on ideological and political education on the operating mechanisms of various practice platforms. Secondly, lack of comprehensive evaluation research on the quality of platform construction. The core of evaluation work is to establish an evaluation model, for example, Fig. 1 demonstrates a framework of evaluation model of practice platform [11].

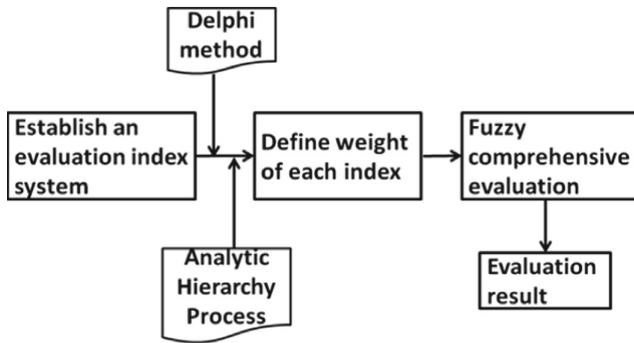


Fig. 1. A framework of evaluation model of practice platform

This paper devotes to exploring and constructing of a comprehensive evaluation method of innovation and entrepreneurship practice platform for college students. The structure of this paper is organized as the following: Sect. 2 describes indispensable characteristics of an innovation and entrepreneurship practice platform. Section 3 demonstrates a specific, scientific and feasible evaluation standard system which emphasis on ideological and political education. Taking software engineering major of Anhui Sanlian University as an example, Sect. 4 gives a specific example for comprehensive evaluating and concludes the paper. Section 5 gives future directions of the research.

2 Characteristics of Innovation and Entrepreneurship Practice Platform

In addition to hardware assurance resource for software engineering major, a complete innovation and entrepreneurship practice education platform needs to have the characteristics of enthusiasm of participating in the innovation guidance of college students for enterprises off-campus, system of innovation and entrepreneurship practice education, innovation and incentive mechanism for teachers, innovation ability of college students for cultivation, ability of ideological and political education to shaping of personality college students positively.

Practice proved that constructing a comprehensive practice platform for engineering students is an effective way to develop their innovative and pioneering abilities for software engineering profession [5]. Table 2 demonstrates indispensable characteristics of an innovation and entrepreneurship practice platform.

Table 2. Indispensable Characteristics of The Platform

<i>Characteristic</i>	<i>Key point</i>
Software engineering practice training base	infrastructure construction
Practice education system for innovation and entrepreneurship	experiment in-class/course design, comprehensive training/ discipline competition, specialty practice, graduation design/practice on innovation and entrepreneurship
Management rule and regulation	innovation and entrepreneurship management regulation for college students
Ideological and political education	elements of ideological and political education mining
Incentive mechanism of innovation and entrepreneurship	policy guarantee
Construction of instructor team	guidance requirement for innovation and entrepreneurship practice activities of students with different interest directions

3 Construction of Evaluation Standard for Innovation and Entrepreneurship Practice Platform

Actually, an innovation and entrepreneurship practice platform is complex system involving an army of factors. The indicators of first-level and second-level are designed, and the weight values of all indicators are determined for evaluation result. Table 3 demonstrates the evaluation standard system for innovation and entrepreneurship practice platform.

3.1 Evaluation Standard of “Excellent”

Evaluation standard of “Excellent” is grade A, which is the best requirement for each construction contents of second-indicator. Table 4 demonstrates part of the construction content of second-indicator for grade A.

3.2 Evaluation Standard of “Pass”

Similarly, evaluation standard of “Pass” is grade C, which is the qualified requirement for each construction contents of second-indicator. Table 5 demonstrates part of the construction content of second-indicator for grade C.

It should be clarified that if the construction content for one certain of second-level of evaluation standard between “Excellent” and “Pass”, it can be considered “Good” (Grade B). On the other hand, if the construction content is failed to “Pass” criteria, it can be considered “Not Qualified” (Grade D).

Table 3. Evaluation Standard System

<i>First-indicator</i>	<i>Second-indicator</i>	<i>Weight</i>	<i>Excellent value</i>	<i>Pass value</i>
1. Practice training base (10%)	1.1 Infrastructure construction	5	5	3
	1.2 Management system	5	5	3
2. Practice education system (20%)	2.1 Experiment	5	5	3
	2.2 Course design, comprehensive training	5	5	3
	2.3 Discipline competition, specialty practice, graduation design	5	5	3
	2.4 Practice on innovation and entrepreneurship	5	5	3
3. Policy guarantee (10%)	3.1 Organization guarantee	4	4	2.4
	3.2 Ground guarantee	3	3	1.8
	3.3 Fund guarantee	3	3	1.8
4. Ideological and political education (20%)	4.1 Elements mining for ideological and political	10	10	6
	4.2 Integration of ideological and political elements into practice	10	10	6
5. Incentive mechanism (10%)	5.1 Establish an incentive mechanism for innovation and entrepreneurship teachers	6	6	3.6
	5.2 Establish a credit accumulation, recognition, conversion system and incentive policy for students	4	4	2.4
6. School-enterprise collaborative innovation (30%)	6.1 Introduction of actual practice projects of enterprises	10	10	6

(continued)

Table 3. (continued)

<i>First-indicator</i>	<i>Second-indicator</i>	<i>Weight</i>	<i>Excellent value</i>	<i>Pass value</i>
	6.2 Enterprise engineers participate in the guidance	10	10	6
	6.3 Teachers of innovation and entrepreneurship on campus participate in the guidance	5	5	3
	6.4 Teachers participate in the instruction in part-time	5	5	3

Table 4. Second-indicator for Grade A

<i>Second-indicator</i>	<i>Requirement of “Excellent” (Grade A)</i>
.....
3.1	College students must earn regular extracurricular credits by participating in various of innovation and entrepreneurship practice activities, subject competitions, etc
3.2	Regular place with perfect supporting facilities
3.3	With stable finance support, special funds have been set up for the construction of the innovation and entrepreneurship practice platform
.....
6.1	Practical projects are all from the enterprise
6.2	Enterprise engineers participate in the guidance through the whole process for each project
6.3	Teachers of innovation and entrepreneurship on campus participate in the guidance for each project
6.4	Teachers participate in the guidance in part-time for each project

4 Comprehensive Evaluating of Innovation and Entrepreneurship Practice Platform for Software Engineering Major of Anhui Sanlian University

The innovation and entrepreneurship practice platform for software engineering major of Anhui Sanlian University was constructed in year of 2020, and it is a multi-level opening practice platform for the field of modern software engineering, which providing college students with an opening environment to improve their software technology

Table 5. Second-indicator for Grade C

<i>Second-indicator</i>	<i>Requirement of “Pass” (Grade C)</i>
.....
3.1	College students could earn quite a few extracurricular credits instead of regular credits by participating in various of innovation and entrepreneurship practice activities, subject competitions, etc
3.2	Irregular place (computer room, laboratory, etc.)with supporting facilities
3.3	With stable finance support, but none of special funds
.....
6.1	Practical projects only use related resource of the enterprises
6.2	Enterprise engineers participate in the guidance
6.3	Teachers of innovation and entrepreneurship on campus participate in the project guidance
6.4	Teachers participate in the project guidance in part-time

and application practice ability positively. The platform fully relies on the modern software engineering comprehensive laboratory (Fig. 2) to promote students' scientific and technological innovation through hierarchical construction and management.

Table 6 demonstrates the three levels of practice activities of innovation and entrepreneurship for college students.

In actual evaluation process, evaluation result should be reasonable, rigorous and scientific. Evaluators consist of education experts, enterprise engineers, college teachers, etc. According to the evaluation standard for innovation and entrepreneurship practice platform, Table 7 demonstrates the result of the evaluation. For a few second-indicators, the reason for the failure to “Grade A” are also listed.

Table 6. Three Levels of Practice Activities of Innovation and Entrepreneurship

<i>Content of practice activities of innovation and entrepreneurship</i>		<i>Year</i>
level 1	Experiment in class, course design, scientific and technological innovation activities of software engineering, innovation and entrepreneurship practice projects, etc	1–2
level 2	Discipline competition, specialty practice, comprehensive training, etc	2–3
level 3	Research on scientific research projects, graduation design(thesis), etc	3–4



Fig. 2. Modern software engineering comprehensive laboratory

Table 7. Result of The Evaluation

<i>Second-indicator</i>	<i>Grade</i>	<i>Second-indicator</i>	<i>Grade</i>
1.1	A	1.2	A
2.1	A	2.2	A
2.3	A	2.4	A
3.1	A	3.2	A
3.3	<u>B</u> (Note: With mutual finance support)		
4.1	A	4.2	A
5.1	A	5.2	A
6.1	<u>B</u> (Note: Some of the practical projects are from the enterprise.)		
6.2	A	6.3	A
6.4	<u>B</u> (Note: Some teachers on campus participate in the guidance in part-time for each project.)		

5 Conclusions

The comprehensive evaluation system in this paper aims to give a relatively scientific and reasonable evaluation method of the construction quality of the innovation and entrepreneurship practice platform for college students. On one hand, it plays a significant role in promoting a wide range of innovation and entrepreneurship training programs, which actively supporting students to participate in innovation and entrepreneurship competitions, and improving training level of comprehensive innovation and entrepreneurship talents. On the other hand, it provides a more scientific

basis for objectively and effectively evaluating the quality of innovative education and quality education in colleges and universities [11].

Future Research

For the further comprehensive evaluation of innovation and entrepreneurship practice platform, from my own perspective, further work will be done in the future. Firstly, because each department (major, etc.) of college has its own innovation and entrepreneurship practice platform, it is indispensable to improve safeguard measures and establish an assessment qualification reviewing system for student teams. Secondly, it is indispensable to increase the assessment indicators of communication and cooperation with practice platforms off-campus in the evaluation system, which achieves the purpose of promoting exchanges with local government or large enterprises through school-enterprise collaboration.

Acknowledgements. This work was financially supported by the Project of Quality Engineering of Anhui Sanlian University (21zlgc076) and the Project of Excellent and Top-notch Talent Cultivation of Anhui Province University (gxbjZD2022087).

References

1. Zhang, L. (2016) The Present Situation, Problems and Strategies of Xi'an College Students in Innovation and Entrepreneurship in the Mode of Internet Plus. *Journal of Xi'an University (Social Sciences Edition)*, 19: 109-112.
2. Li, T. (2017) Construction of Practical Platform for Undergraduate Students in Application Oriented Universities Based on "Trinity". *Journal of Qiannan Normal University for Nationalities*, 37: 60-64.
3. Ye, K. (2017) Research on Practice Platform of College Students' Innovation and Entrepreneurship under the Background of "Internet +". *Journal of Chongqing University of Science and Technology (Social Sciences Edition)*, 7: 107-109.
4. Tu, B., Wu, J.H., Zhang, G.Y., etc. (2017) Multidimensional Practice Platform of Electronic Information Specialty in Cultivating Innovation Ability of College Students. *Journal of Hunan Institute of Science and Technology (Natural Sciences)*, 30: 89-92.
5. Chen, L., Xu, X.Y., Lin, H. (2017) Construction and Use of the Comprehensive Practical Platform of Innovation and Entrepreneurship Education for Engineering College Students. *Research and Exploration in Laboratory*, 36: 180-184.
6. Zhang, X.H., Bai, F., Huo, Y.G. (2020) Exploration and practice on platform for innovation and entrepreneurship of college students. *Experimental Technology and Management*, 37: 28-30.
7. Peng, J.X., Wang, H.R. (2020) Discussion and Research on the Creation Technology of Innovation and Entrepreneurship Practice Platform for College Students. *Computer Engineering & Software*, 41: 54-57.
8. Sun, S.Q. (2021) Research on the Construction of Innovation and Entrepreneurship Practice Platform for Private College Students—Longqiao College of Lanzhou University of Finance and economics as an example. A Thesis for Degree of Master of Northwest Normal University.
9. Zhao, J., Hao, G.C., Yu, Z.H. (2014) Investigation and Practice on Platform for Undergraduate Students' Innovation and Practice. *Experimental Technology and Management*, 31: 20-22.

10. Zhao, K. Discussion on Construction of a Practice Platform for College Students' Scientific and Technological Innovation in Independent Colleges: A Case Study of Tianmu College of Zhejiang A & F University (2012) *Journal of Chongqing University of Science and Technology (Social Sciences Edition)*, 1: 189-190.
11. Zhang, Q.Y., Yu, M., Zhang, P., etc. (2010) Comprehensive Evaluation Model of Innovative Practice Platform for College Students. *Journal of Wuhan University of Technology (Social Sciences Edition)*, 23: 611-614.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

