

# Research on the Construction of the Second Classroom of Innovation and Entrepreneurship in Industry Characteristic Universities

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**Abstract:** The study conducted a survey among the university with typical industry characteristics and analyzed the current situation together with problems about the construction of the second classroom of innovation and entrepreneurship education. It found that the positive role of the second classroom was generally recognized by college students. However, there were some deficiencies in the second classroom of innovation and entrepreneurship, such as, low participation rates, utilitarian tendency and inefficiency of comprehensive management etc. In order to promote the development of the educational function of the second classroom, the incentive mechanism of innovation and the entrepreneurship evaluation should be improved, the faculty building and integrated management in second classroom of innovation and entrepreneurship should be strengthened on the premise of confronting the role about the second classroom of innovation and entrepreneurship.

**Keywords:** Industry characteristic university; Innovation and entrepreneurship; Second classroom

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## 1. Research Background And Problems

With the in-depth development of world multi-polarization and economic globalization, scientific and technological progress is changing with each passing day, and the talent competition is becoming increasingly fierce. The key to China's future development and national rejuvenation lies in talents and education. In 2010, [The Outline of the National Medium and Long-term Education Reform and Development Plan (2010-2020)] was issued, which pointed out that “people-oriented, comprehensive implementation of quality education”, and improving students' “sense of social responsibility to serve the country and the people, innovative spirit to explore and practical ability to solve problems”; In the same year, [The Opinions of the Ministry of Education on Vigorously Promoting Innovation and Entrepreneurship Education in Colleges and Universities and College Students' Independent Entrepreneurship] pointed out that it is necessary to “widely carry out innovation and entrepreneurship practice activities”, “enrich students' innovation and entrepreneurship knowledge and experience, and promote students' innovation energy and entrepreneurship ability”; In 2015, [The Implementation Opinions of the General Office of the State Council on Deepening the Reform of Innovation and Entrepreneurship Education in Colleges and Universities] was issued to “speed up the cultivation of innovative and entrepreneurial talent teams with large scale, innovative spirit and courage to devote themselves to practice”; In 2017, order No. 41 of the Ministry of Education of the People's Republic of China promulgated [The Regulations on the Administration of Students in Colleges and Universities], requiring colleges and universities to encourage college students to participate in innovation and entrepreneurship practice through credit conversion, major transfer, suspension and other regulations. China pays more and more attention to innovation and entrepreneurship education and takes building an innovative country as an important national development strategy. As an important extension of the first classroom, the second classroom is of great significance in making up for the lack of practical experience of students and the limitations of entrepreneurship education in the first classroom in colleges and universities. At the same time, with the development of society and the deepening of education and teaching reform, the content and form of the second classroom in colleges and universities should be continuously expanded and innovated.

Industry characteristic university is an important part of China's higher education. It refers to a university or college that relies on the industry, focuses on the needs of the industry and aims at the characteristics of the industry to cultivate high-quality professionals for specific industries<sup>[1]</sup>. In the late 1990s, in order to overcome the disadvantages of running schools by departments, China carried out the reform of higher education system guided by “co-construction, adjustment, cooperation and merger”<sup>[2]</sup>. At the same time, with the withdrawal and merger of a large number of industrial departments, after 2000, most of the ordinary colleges and universities directly under the relevant ministries and commissions of the former State Council have been put under the jurisdiction of local governments or the Ministry of Education directly, and a new mechanism of central and provincial management and overall management of provincial governments has been gradually formed. The history of higher education running by industrial departments has basically ended. After long-term accumulation and precipitation, industry characteristic universities have distinctive school running characteristics and prominent discipline advantages. They have trained a large number of excellent innovative talents and industry technical backbone for the industry and become an important scientific research and talent training base for the industry. With the social development and the reform of higher education, it is facing the transformation from the basic pattern of “establishing relying on the industry and developing through serving the industry” to “going out of the industry and leading and surpassing the industry”<sup>[3]</sup>. Under the background of “mass entrepreneurship and innovation”, how to strengthen the reform of innovation and entrepreneurship education

in industry characteristic universities and how to open up a way for the cultivation of innovation and entrepreneurship talents through the construction of the second classroom are major issues worthy of consideration and research.

## **2. Research on The Second Classroom of Innovation And Entrepreneurship**

The second classroom refers to the educational practice activities relative to the first classroom, that is, the practice of various activities that students voluntarily participate in and carry out in an organized and planned manner outside the specified teaching plan courses, including political, academic, public welfare, entertainment and other activities<sup>[4]</sup>. The second classroom of innovation and entrepreneurship in colleges and universities mainly refers to various extracurricular activities around the theme of innovation and entrepreneurship participated by college students.

In order to enhance the pertinence and representativeness of the research, the author takes North China Electric Power University, a typical industry characteristic university, as the object to carry out in-depth research. North China Electric Power University was established in 1958. With the reform of higher education and power system, it was transferred to the Ministry of Education in 2003, and a council was established to participate in the joint construction. Taking talent training as the fundamental task, the university has formed the talent training characteristics of "strengthening foundation, emphasizing practice, improving ability and seeking innovation". Since its establishment, the university has undertaken the historical mission of cultivating high-quality talents and promoting scientific and technological progress for the national energy and power industry. The University attaches importance to the cultivation of students' innovation and entrepreneurship ability, and continuously strengthens the construction of the second classroom of innovation and entrepreneurship education by establishing innovation classes and experimental classes, carrying out college students' innovation and entrepreneurship training program projects, guiding students to participate in science and technology competitions, building college students' entrepreneurship incubation centers, applying for national, provincial and ministerial mass entrepreneurship spaces, etc. Graduates are widely praised by employers for their "solid theory, strong practical ability, broad vision and promising innovation".

In order to comprehensively investigate the development of the second class of innovation and entrepreneurship, the author collected and sorted out the relevant materials and data of entrepreneurship education in North China Electric Power University, selected five innovation and entrepreneurship instructors to conduct in-depth interviews, and specially designed the questionnaire for the second class of innovation and entrepreneurship. A total of 650 questionnaires were distributed to students, 632 valid questionnaires were recovered, and the questionnaire efficiency was 97.23%, including 484 undergraduates, 148 postgraduates, 310 boys and 322 girls. The specific purpose of the questionnaire survey is to understand the overall attitude, understanding, evaluation and suggestions of college students from university with typical industry characteristics on entrepreneurship, the second classroom and the second classroom of innovation and entrepreneurship.

Through comprehensive analysis of the special interview and questionnaire, it is not difficult to find that: students have a high awareness of the second classroom, and 71.84% of students say they have a certain understanding of the second classroom; Students have a high degree of recognition for the second classroom. 18.35% of the students believe that "the second classroom is as important as the first classroom", and 78.16% of the students believe that "the first classroom is the main and the second classroom is the auxiliary, and the two complement each other"; Through the second classroom, students can exercise and improve their abilities in many aspects. The survey found that the top five are: interpersonal skills, organization and management skills, practical operation skills, learning skills and logical thinking skills.

## **3. Prominent problems in the second classroom of innovation and Entrepreneurship**

According to the survey results, college students have high entrepreneurial intentions. For the question "Are you starting or considering starting a business?", nearly 70% of the students choose "Already established company", "Want to start a business very much", "Considering and learned it", "Considering but not learned it". To some extent, it shows that the attention and investment of the state, society and colleges and universities to college students' innovation and entrepreneurship education in recent years have achieved initial results. However, through the in-depth statistical analysis of the survey data, it can be found that there are some prominent problems in the construction of the second classroom of innovation and entrepreneurship in colleges and universities, mainly in the following three aspects:

### **3.1 Students' participation in the second classroom of innovation and entrepreneurship is insufficient**

The second classroom activity of innovation and entrepreneurship, as an important way for students to improve their comprehensive ability of innovation and entrepreneurship, has been widely recognized and participated by college students with its free organizational form and open group atmosphere. By participating in the second classroom activities, college students strengthen their professional knowledge and improve their personal practical ability. Through the survey, it is found that college students' participation in the second classroom of innovation and entrepreneurship is lower than their love. For the question "which of the following second classroom activities do you like best", college students like "student association activities" most, with a rate of 63.61%, followed by "Professional internship and practice" and "social public welfare activities", with a rate of about 50%, the rate of "Social practice activities" and "science and technology competition" is about 48%, while only 27.22% like "Entrepreneurial projects". The survey results of College Students' participation in the second classroom activities show that the rate of participating in "student association activities" is 77.22%; "Social practice" came second, 64.56%; "Social public welfare activities" was 43.35%; The rate of participating in "Entrepreneurial projects" is only 16.46%.

Through the comparison of Fig.1, it is found that college students' participation in "Student association activities" and "Social practice activities" is higher than their love, while their love for "Social public welfare activities", "Science and technology competition", "professional internship and Internship", "entrepreneurship projects" is higher than their participation. These four kinds of activities are important forms of the second classroom of innovation and entrepreneurship in colleges and universities. It can

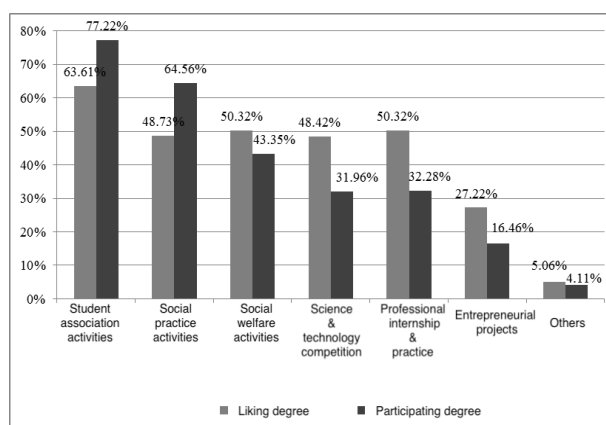


Fig.1 Comparison of college students' love and participation in second classroom activities

be seen that the second classroom of innovation and entrepreneurship fails to meet the potential needs of college students. The main reason is that the innovation and entrepreneurship activities started relatively late, and are mainly carried out in the form of innovation and entrepreneurship competitions, innovation and entrepreneurship projects and entrepreneurship community activities. The form is relatively single, which virtually improves the threshold for students to participate in the second classroom of innovation and entrepreneurship, and makes a considerable proportion of students “look timid” to the second classroom of innovation and entrepreneurship.

There are differences in the participation of students of different types and grades in the second classroom of innovation and entrepreneurship. The survey results of the question “The type of second classroom you have participated in” show that undergraduates’ participation in second classroom activities such as social practice activities, science and technology competitions, professional internships and internships, and entrepreneurship projects is significantly lower than that of postgraduates. Junior students have higher participation in all kinds of second classroom activities than other undergraduate students, and have the highest participation in social practice activities, science and technology competitions, entrepreneurship projects and other activities, as shown in Fig. 2&3. The reason for the higher participation of postgraduates than undergraduates is that compared with undergraduates, postgraduates have a more comprehensive and in-depth grasp of professional knowledge and more free time. The reason why the junior students have higher participation than other grades is that the junior students are under great pressure of entering a higher school and employment. A considerable number of students participate in the second class of innovation and entrepreneurship in order to obtain corresponding bonus points for examination free recommendation, which shows the utilitarian tendency of students to participate in the second class. For the question “The main purpose of participating in the second classroom activities of innovation and entrepreneurship”, about 35% of the students choose “Improve comprehensive quality and ability”, nearly 35% choose “Add points for postgraduate recommendation/excellence evaluation”, and the remaining 30% choose “Prepare for entrepreneurship in the future”. The acquisition of innovation and entrepreneurship ability requires continuous learning and practice. It is an important task and has a long way to go for the colleges and universities to strengthen the construction of the second classroom of innovation and entrepreneurship, and mobilize students at all levels and grades to actively participate in the second classroom of innovation and entrepreneurship.

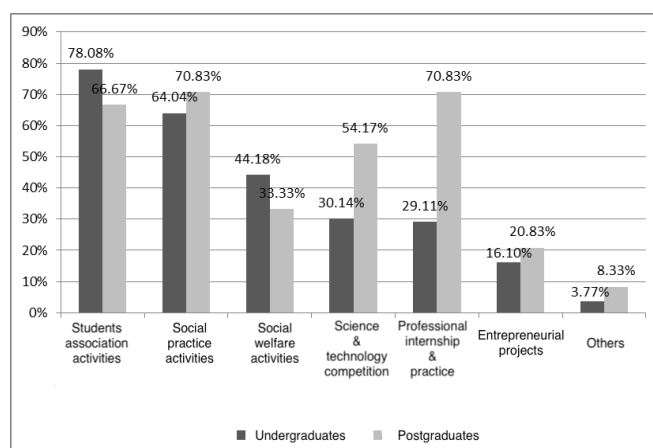


Fig. 2 Comparison of different types of college students' participation in second classroom activities

### 3.2 The teachers in the second classroom of innovation and Entrepreneurship are weak

The teachers of the second classroom of innovation and entrepreneurship in Colleges and universities mainly include the organization teachers and guidance teachers of the second classroom of innovation and entrepreneurship. The organizers of the second classroom of innovation and entrepreneurship are mainly counselors and school employment staff. Most of them have strong activity organization ability, but they are occupied by routine work, lack practical experience in innovation and entrepreneurship, and lack experience in the design, activity organization and guidance of the second classroom, so it is difficult to achieve the desired effect. For

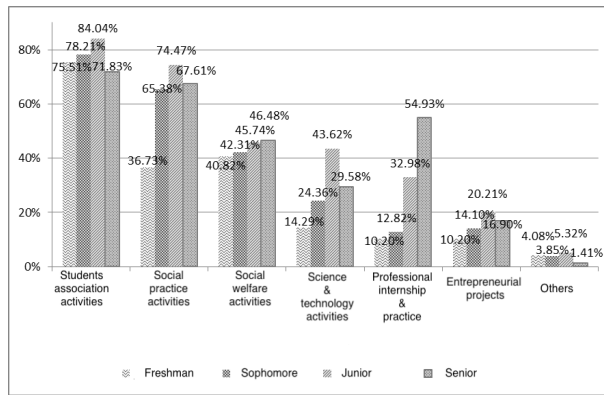


Fig. 3 Comparison of undergraduate students of different grades participating in the second classroom activities

the instructors in the second classroom of innovation and entrepreneurship, the sources are relatively narrow, mainly in-school teachers, and there are few off-campus teachers with practical experience in innovation and entrepreneurship. Moreover, the communication and interaction between teachers and students are mostly short-term targeted guidance around innovation and entrepreneurship related events or projects, and rarely long-term continuous guidance based on the cultivation of innovation and entrepreneurship teams.

In addition, the process of establishing contact between students and instructors mostly stems from students' spontaneous behavior. For the question of "The main obstacles participating in the second classroom of innovation and entrepreneurship", 44.3% of students choose "it is difficult to find instructors". At the same time, for the question of "The most needed functions of the second classroom management platform for innovation and entrepreneurship", 61.08% of students choose "two-way choice of entrepreneurial mentors". There is serious information asymmetry between students and instructors in the second classroom of innovation and entrepreneurship in colleges and universities, which fails to give full play to the intellectual resources and advantages of college teachers. The reasons are as follows: First, most college teachers lack entrepreneurial practical experience, and undertake a wide range of teaching, scientific research and management affairs, so the time available for the second class of students' innovation and entrepreneurship is limited; Second, incentives for teachers are insufficient. The school takes a series of measures to encourage teachers to participate in the second classroom activities of students' innovation and entrepreneurship. Generally, corresponding teaching and research rewards are given according to the competition or assessment results obtained by students participating in competitions and projects. As a result, compared with the long-term cultivation of innovation and entrepreneurship teams, college teachers prefer to guide innovation and entrepreneurship competitions and projects.

### 3.3 The second classroom management of innovation and entrepreneurship is inefficient

In recent years, colleges and universities have generally attached importance to innovation and entrepreneurship education and strengthened the construction of leadership and coordination institutions for entrepreneurship work. North China Electric Power University has established a leading group for innovation and entrepreneurship education headed by the president, which provides organizational guarantee for the development of innovation and entrepreneurship education. The University has been selected into the "Innovation talent training demonstration base" of the Ministry of Science and Technology and the "NCEPU · Spark" maker space has been rated as a national maker space. As an important position of innovation and entrepreneurship education, the second classroom of students' innovation and entrepreneurship has been widely valued by the Academic Affairs Office, Graduate School, Students' Affairs Division, School Youth League Committee, every Departments and other management departments. All departments jointly or separately led the second classroom activities of innovation and entrepreneurship in various forms and rich contents. Students have won many symbolic honors such as "Xiaoping scientific and technological innovation team" and "China Youth Scientific and Technological Innovation Award". However, in the practice and research of the second classroom of innovation and entrepreneurship, it is found that the comprehensive efficiency of the second classroom of innovation and entrepreneurship in colleges and universities needs to be improved. Firstly, it is reflected in the efficiency of organization and management. Influenced by both historical and practical factors, the leading management organization department has accumulated unique management mode and teacher resources in the second classroom of innovation and entrepreneurship, but there is a lack of interactive communication and information sharing mechanism and platform between departments, resulting in duplication and low efficiency of management to a great extent. Secondly, the efficiency of information transmission in the second classroom of innovation and entrepreneurship is not high. The main reason is that the second classroom of innovation and entrepreneurship is led, organized and managed by various departments respectively, showing diversification in information transmission channels, which increases the time cost for students to obtain relevant information. Meanwhile, the information transmission way has not fully utilized the advantage of information technology, through investigation and study, we have learned the way of students to get information about second class information of innovation and entrepreneurship. 24.26% of students are through campus propaganda or commendation activities, 22.73% through university official website, 24.38% through university or departments official account, 23.09% through teachers or classmates, as shown in Fig. 4.

## 4. Key measures to strengthen the construction of the second classroom of innovation and Entrepreneurship

In order to improve the effectiveness of the second classroom of innovation and entrepreneurship, we should focus on incentive mechanism, team construction and platform construction, as follows:

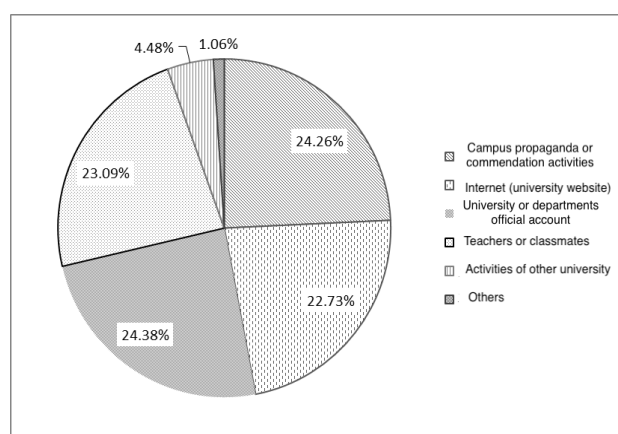


Fig. 4 ways to obtain information in the second classroom of innovation and entrepreneurship

#### 4.1 Improve the evaluation and incentive mechanism of the second classroom of innovation and entrepreneurship

Establishing and improving the evaluation and incentive system is not only an important guarantee for the sustainable development of the second classroom of innovation and entrepreneurship, but also an important means to improve the development effect of the second classroom of innovation and entrepreneurship. Due to the concealment and lag of the role of innovation and entrepreneurship education, it is not suitable to take the actual results obtained by students participating in the second classroom of innovation and entrepreneurship as the only standard for assessing and evaluating teaching activities. At the same time, only relying on the curriculum model construction of teaching units and students' active participation is difficult to ensure sustainable development. We must cooperate with the overall coordination of relevant departments at the school level to form a broad linkage mechanism.

Colleges and universities should establish a scientific evaluation system for the second classroom of innovation and entrepreneurship, which helps to mobilize the participation enthusiasm of teachers and students. The factors to be considered include: first, the development goal of the second classroom of innovation and entrepreneurship. The second classroom of innovation and entrepreneurship is designed to provide college students with opportunities for innovation and entrepreneurship practice and let them experience the "trial and error" and "iteration" process of innovation and entrepreneurship practice; Second, the contents and levels of the second class of innovation and entrepreneurship. Universities with industry characteristics should combine their own school running advantages to carry out practical activities such as innovation and entrepreneurship forums, competitions, practical training and roadshows for students of different grades and majors, so as to attract students of all grades and majors to participate in them; Third, improve the evaluation and incentive mechanism of the second classroom of innovation and entrepreneurship. University evaluation should focus on the material guarantee and system support of innovation and entrepreneurship, teacher evaluation should focus on the realization of innovation and entrepreneurship education objectives, and student evaluation should focus on the cultivation of innovation and entrepreneurial spirit and ability improvement.

The construction of scientific, standardized and humanized evaluation and incentive system for the second classroom of entrepreneurship course can improve the teaching efficiency of the second classroom of entrepreneurship course. Among them, for the second classroom instructor of innovation and entrepreneurship, the university can calculate the workload and give class hour allowance according to the activity time, place, content and professional title; For students, relevant entrepreneurship education credit incentive policies can be issued, the credit system management can be implemented for college students to participate in the second classroom, and the innovation and entrepreneurship credits for participating in discipline competitions, technical training and innovation and entrepreneurship projects can be converted into innovation and entrepreneurship credits according to different standards and included in the talent training plan.

#### 4.2 Strengthen the construction of teachers in the second classroom of innovation and entrepreneurship

Innovation and entrepreneurship education is a highly practical educational activity. The improvement of students' innovation and entrepreneurship ability must be through the joint action of classroom teaching and extracurricular activities. After long-term accumulation and precipitation, industry characteristic universities have accumulated rich alumni resources and partners inside and outside the industry. Giving full play to the strength of alumni and promoting school-enterprise cooperation is an important way to expand the strength of innovative and entrepreneurial teachers. The second classroom of innovation and entrepreneurship can provide a broad platform for promoting in-class and out-of-class interaction and integrating in-school and out-of-school educational resources.

To improve the construction of teachers in the second classroom of innovation and entrepreneurship, we should strengthen the construction of teachers in and outside the school: in terms of teachers in the school, first, encourage teachers in colleges and departments to participate in competitions and project guidance, and strengthen the quality of students' participation in the second classroom activities of innovation and entrepreneurship; second, promote more full-time personnel of innovation and entrepreneurship to go out to participate in innovation and entrepreneurship training, seminars and other activities, so as to learn advanced ideas of entrepreneurship and innovation education and carry out various second classroom activities. At the same time, colleges and universities should strive to integrate various social forces, including alumni and enterprise resources, to jointly participate in the cause of innovation and entrepreneurship education: first, develop alumni resources, regularly invite alumni to hold special lectures, share the current situation of industry development and technological frontier, and guide students' innovation and entrepreneurship teams

to convey the needs of industry and market; Second, attract entrepreneurial mentors and hire outstanding alumni with entrepreneurial experience to serve as mentors of entrepreneurial student teams to help them participate in competitions and carry out research on innovative and entrepreneurial projects; Third, deepen the cooperation between universities and enterprises, pay attention to the win-win sharing of resources and information between schools and enterprises, expand the student internship platform, enable students to understand the social and market needs, understand the enterprise establishment and business philosophy, enable students to improve the quality and ability of innovation and entrepreneurship in theoretical learning and social practice, and create a benign entrepreneurial culture atmosphere for the campus.

### **4.3 Strengthen the comprehensive management of innovation and entrepreneurship education**

Innovation and entrepreneurship education is a brand-new educational concept and model that requires full participation, all-round coverage and whole process implementation. The second classroom entrepreneurship practice activities need the strong cooperation and close cooperation of all departments of the university. In order to improve the effectiveness of innovation and entrepreneurship education, the university can improve the comprehensive management ability of innovation and entrepreneurship education from three aspects: first, straighten out the functions and relations of relevant departments in innovation and entrepreneurship education, make the rights and responsibilities of various departments clear and cooperate closely, and mobilize the joint efforts of educational administration, students and workers, school enterprises, colleges and departments and other departments to give full play to the effect of education; Second, strengthen the construction and management of college students' entrepreneurship incubation base, provide good entrepreneurial opportunities and incentive environment for college students' innovation and entrepreneurship, and attract more college students to sprout entrepreneurial intention. It is an effective model for the second classroom of college students' entrepreneurship course. At the same time, it provides comprehensive support in terms of venue, capital, technology, information, marketing, management and consultation for small and micro enterprises with professional characteristics, Facilitate the practice and training of relevant majors, and attract a large number of students to actively participate in independent entrepreneurship; Third, build an innovation and entrepreneurship education network platform to realize the functions of innovation and entrepreneurship online learning, information release, information management, formalities handling, teacher-student interaction and online communication. At the same time, provide online discussion for the second classroom of innovation and entrepreneurship, activate the campus entrepreneurship atmosphere and enhance the attraction of the second classroom of innovation and entrepreneurship.

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