

A Study on the “Dual Roles, Dual Capabilities” Team Construction of Experimental Teachers in a Local Application-oriented University

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Abstract: The important content in the construction of Application-oriented University is to strengthen the team construction of experimental teachers. Our survey has revealed that there are various problems existing with the experimental teaching staff, such as lack of an overall program, team construction lagging behind, low educational level, insufficient practical capability, fewer training opportunities, limited improvement space etc. It is these problems that restrict the construction of Application-oriented University. Therefore, we need to enhance our cognition and make a comprehensive program; recruit external talents together with the internal training so as to improve the construction level; perfect our policy and intensify the incentive; build a platform and cultivate students through practice. In a word, we should try our best to build a team of experimental teachers at a higher level in Application-oriented University.

1. Introduction

In a broad sense, the team of experimental teachers in application-oriented university refers to the teachers and experimental technicians engaged in experimental teaching. Actually, this team should be regarded as an important part of the teaching staff as well as the focal part in constructing the “dual roles, dual capabilities” team of experimental teachers. Therefore, the significant content in establishing the application-oriented university is to reinforce the team construction of experimental teachers and improve their quality as well.

The construction of a local application-oriented university is not only a systematic project, but also a long process of transformation and development. In this regard, we have done the analysis on the current situation of experimental teachers’ team in our university from which several issues have been discovered, first, we have been lack of an overall program and the team construction has been lagged behind. Secondly, the educational level for most of the experimental teachers is low and their practical ability is insufficient. Thirdly, the experimental teachers generally have fewer training opportunities and narrow space to improve themselves. Accordingly, suggestions and strategies have been put forward to construct the team of experimental teachers in our local application-oriented university as follows: enhancing our cognition and formulating a comprehensive program; carrying out the work of internal training together with the external recruitment and improving teachers’ working competence; perfecting our policy and intensifying the incentive; finally, setting up a platform and cultivating our students through practice.

2. Significance of strengthening the team construction of experimental teachers in a local application-oriented university

First, strengthening the team construction of experimental teachers in a local application-oriented university is of great theoretical significance for the construction of application-oriented undergraduate university as well as the team construction of “dual roles, dual capabilities” of experimental teachers. Moreover, encouraging more local universities to reinforce the application-oriented construction is an inevitable requirement for the supply-side reform and structural adjustment of Higher Education in China. It is also an inevitable choice for the local university to make a scientific and reasonable positioning, cultivate university-running

characteristics, elevate service ability and realize the dislocation development. Accordingly, to construct teachers' team of "dual roles, dual capabilities" should be treated as the crucial part, meanwhile, as a matter of fact, strengthening the team construction of experimental teachers in the application-oriented university can help to enrich the relevant theory concerning the team construction of "dual roles, dual capabilities".

Secondly, strengthening the team construction of experimental teachers in a local application-oriented university is of practical significance for promoting the innovation and entrepreneurship education in the university. In 2015, the General Office of the State Council issued the Implementation Suggestions on Deepening the Innovation and Entrepreneurship Education Reform in Colleges and Universities, which is a programmatic document in guiding the innovation and entrepreneurship education reform in colleges and universities in China. Great attention has been paid to the tasks in nine aspects from the Suggestions in which the fifth aspect is to reinforce the innovation and entrepreneurship practice, at the same time, the Suggestions have proposed to promote the sharing of experimental teaching platform, establish a number of off-campus innovation and entrepreneurship practice bases for university students and hold national innovation and entrepreneurship competitions for students as well [1], anyhow, all of this need the support from the team of high level experimental teachers.

Thirdly, strengthening the team construction of experimental teachers in a local application-oriented university is of direct practical significance for cultivating application-oriented talents who can combine knowledge with practice. According to the development needs of the service area and the industry, we can integrate the industry with our education, taking the university-enterprise cooperation as a breakthrough, considering practice, experiment and training as the basic ways in order to cultivate the application-oriented talents. Furthermore, the curriculum system should be reconstructed, practice platform be built, dual tutors either from university and local place be implemented, "double certificate" system of academic certificate and professional qualification certificate be promoted, thus, we can realize the connection between professional chain and industrial chain, the connection between curriculum content and professional standard, and the connection between teaching process and production process, however, all of this are inseparable from the careful guidance and practical education of experimental teachers.

3. Analysis on the current situation of the experimental teachers' team in a local application-oriented university

With the rapid development of Higher Education, the team of experimental teachers in colleges and universities in China has developed at a high speed. Experimental teaching and laboratory construction have become an important part of university education and teaching. However, due to historical and conceptual reasons, the level and quality of experimental teachers are generally not at certain height, in the meantime, the phenomenon of unstable team is widespread. The foundation of local colleges and universities is weak either, and the team construction of experimental teachers is still confronted with many difficulties during the process of application-oriented transformation. We have found out, in our preliminary investigation, the following issues: first, the cultivation objective for experimental teaching teachers is vague, the clear and decisive target positioning being lacked. Secondly, the evaluation mechanism of experimental teaching faculty is single and the incentive effect is limited. Thirdly, the management system has not given full play to the initiative and enthusiasm of subordinate colleges in the construction of experimental teaching faculty.

However, the construction of application-oriented university has presented new and higher requirements for constructing the team of experimental teachers, but the existing team of experimental teachers is still unable to adapt to the development of application-oriented university. The main manifestations are as follows:

3.1 Lacking an overall program - team construction lagging behind

In fact, the construction of laboratory work and experimental teachers is an important part in the application-oriented university construction, but most of the application-oriented universities lack

an overall program. According to the survey of 41 application-oriented universities in Z province, many of them have the discipline construction program, specialty construction program and teachers' team construction program, but there is no corresponding program for the team construction of laboratory and experimental teachers, the work of which is relatively weak. Some colleges and universities usually focus their attention upon the team construction of professional teachers and scientific researches when formulating and revising the talent construction program, they seldom put forward specific plans for the development of experimental teachers, especially experimental technicians, as a result, the team construction of experimental teachers has lagged behind the development of university and been a weak place in the application-oriented university construction.

3.2 Low educational level - insufficient practical capability

Influenced by the wrong idea that scientific research is more important than technique, the experimental teaching is usually considered to be the subsidiary work to theoretical teaching so that the experimental teachers are put in a position of being ignored and laboratory technicians are regarded as auxiliary people serving in teaching, which makes people with higher educational background unwilling to work in laboratory [2]. According to Li Cheng and Zhu Haiyan's survey of 1,393 laboratory staff in 34 universities in Zhejiang province in 2013, the situation can be described as follows: at first, the experimental teachers in undergraduate universities are mainly young and middle-aged with bachelor's degree and intermediate title, their status is not high. Secondly, the staffing rate is low, but pressure is high, thus, turnover intention is high, too. Thirdly, the payment is low, training opportunities few and research ability weak [3]. Furthermore, the field investigation of H university done by us has also revealed something as below: there were 87 experimental technicians in the university in 2017 among whom there are 50 technicians with bachelor's degree or below, 37 with master's degree and none with doctoral degree. 14 technicians have had the professional title of senior laboratory engineer, 54 technicians have had the experimentalist title, 19 people have had either the professional title of assistant experimentalist or unclassified, this kind of situation has definitely restricted the improvement of laboratory construction. With the deepening of education reform, more and more attention has been paid to those teaching models such as the university-enterprise cooperation, the production-teaching integration in order to cultivate the application-oriented talents, anyhow, it is difficult for the existing experimental teachers to play an active role because of their insufficient practical ability, but the new challenge has been posed to experimental teachers with students' innovation and entrepreneurship activities, design and research experiments.

3.3 Fewer training opportunities - narrow space for improvement

Compared with professional teachers, experimental teachers and experimental technicians in the application-oriented university have fewer opportunities to receive their professional training and update their knowledge at home and abroad, normally, they are busily engaged in laboratory affairs, and their workload of class hours is not respected, which greatly affects the improvement of the experimental technicians' quality and ability. In addition, the current policy stipulates that the technical title of experimental technicians is only to the deputy senior, which is lower than that of teachers' series, research series and library series, thus, the upward space is obviously quite narrow so that the enthusiasm of experimental technicians and the long-term development of this team has been affected.

4. Strategies and suggestions on the team construction of experimental teachers in a local application-oriented university

4.1 Enhancing cognition - making an overall program

Experimental teaching is a very important part in Higher Education, especially in the application-oriented university. Foreign universities attach great importance to the team

construction of experimental teachers. Within their overall program of university development, the team construction of experimental teachers is contained, clear requirements are put forward, the employment system is adopted so as to ensure the corresponding treatment, therefore, the team is relatively stable. Furthermore, the experimental teachers in foreign universities are highly qualified since all of them are required to own a doctor's degree, teachers engaged in experimental courses equally enjoy the same title and treatment as those who teach theoretical courses, their learning as well as their improvement have been focused on. Every year, the experimental teachers are arranged to attend relevant meetings, learning, exchanging and training so that they can try to infiltrate the latest research results into the experimental teaching for students and improve the level, the effectiveness of their teaching. In addition, foreign universities often employ professional and experienced off-campus senior technical people as part-time teachers in order to intensify students' practical teaching [4]. Thus, the research and successful practice on the team construction of experimental teachers in foreign universities has provided reference for the team construction of experimental teachers of universities in China, especially for the application-oriented university.

Therefore, from the perspective of healthy development of the application-oriented university, we should enhance our cognition towards the team construction of experimental teachers, incorporate the construction into the overall development program of our university, formulate a special program for the team construction of experimental teachers, set up a special organization for the construction and management of laboratories, feasibly strengthen the team construction of experimental teachers and make up for the shortcomings.

4.2 Internal training - external recruitment to improve the level

What we suggest here is that the team construction of a higher level of experimental teachers should start with the internal training and external recruitment and the fundamental point is to reinforce the team cultivation of the existing experimental teachers. According to the special program of the team construction of experimental teachers, the special organization of laboratory construction and management in our university have adopted different cultivation methods at different levels to organize the cultivation such as inviting scholars or experts to deliver lectures, meanwhile, experimental teachers have also gone out of our university to participate in various academic activities, etc. Moreover, the lab directors and key laboratory staff have been organized to visit other universities, attending meetings at home and abroad concerning the experimental teaching and laboratory construction. With regard to the young and middle-aged backbone teachers, they have been selected and sent to the high-level universities inside and outside our province for further study, or have been sent to the local backbone enterprises for part-time study so as to broaden their horizons, understand and have a good command about the development and practical application of the discipline, and improve their experimental teaching level and practical application ability. Besides, we have held a series of lectures on experiments, invited high-level experimental teachers and laboratory management experts to give lectures and guidance for our experimental teachers [5]. At the same time, we have organized the experimental teachers to apply for the related scientific research projects and experimental teaching projects as well, our attention has been focused on the advanced teaching concepts and the cutting-edge technology to promote the reform of practical teaching system and methods, actively compiled experimental teaching materials and instructions, updated experimental teaching items and content according to the plan, and timely transformed the cutting-edge scientific achievements and advanced industrial technologies into the experimental teaching items and content. In addition, we have actively carried out the improvement, research and self-made work of experimental instruments, and simultaneously recruited the high-level experimental technical talents to replenish the team of experimental teachers, cooperated between our university and local place, invited enterprise elites and engineers as the experimental practice instructors and part-time teachers.

4.3 Improving policy - intensifying incentive

From the perspective of constructing the application-oriented university, the team construction of high-level experimental teachers requires us to improve the relevant policy and system so as to

guarantee and stimulate the team construction of experimental teachers which includes (1) The post access system and policy: that is, according to the needs of our application-oriented university construction, discipline development and specialty construction, we have decided the number of experimental teachers and experimental technicians to be recruited, the conditions of recruitment and the relevant treatment, both professional teachers and experimental teachers have been recruited at the same time and their salary is mutually equal as far as possible. (2) Improving our policy for further study: that is, based on the construction of our application-oriented university, we have further clarified and refined the relevant rules for further study of experimental teachers and experimental technicians, including the laboratory study in high-level universities at home and abroad, the temporary work in enterprises or studying for professional degrees and so on. (3) Professional title evaluation policy: that is, we have decided the professional title evaluation conditions according to the post characteristics of our application-oriented university. At present, the highest title for experimental teachers is associate professor, therefore, we have first actively reported the situation to the higher authoritative department for improvement, secondly, we have employed those particularly excellent experimental technicians who are professionally lowly-titled to the higher-titled position, in particular, we have even employed those extraordinarily excellent senior experimental engineers as professors in our university, thus, producing a demonstration effect as well as an incentive effect.

4.4 Building a platform - cultivating students through practice

Moral education is the foundation of colleges and universities, while for experimental teachers, it is quite necessary to reinforce the cultivation through practice. Accordingly, we have intensified our cultivation of application-oriented talents with high quality by relying on the national, provincial and university key laboratories, the experimental teaching demonstration centers, the collaborative innovation centers and other platforms. In the meantime, we have increased the opening hours of laboratories, encouraging students to conduct innovative, research-based learning and experiments autonomously, actively offering students guidance for their national, provincial and university innovation and entrepreneurship training programs as well as their laboratory opening programs so as to improve students' innovation and entrepreneurship capability [6]. Furthermore, students' experimental skill competitions and assessments have been organized, their various discipline competitions and the innovation and entrepreneurship activities have been supported, we have acted as the instructors of students' discipline competitions, assisting and instructing students' "Mass Innovation Space", "Innovation Workshop", "Maker Training Camp" and their patent application, consequently, the application-oriented talents with high quality have been cultivated through practical experimental activities.

5. Conclusion

The construction of a local application-oriented university is not only a systematic project, but also a long process of transformation and development. The team construction of experimental teachers is one of the important aspects. On the one hand, the construction of the application-oriented university urgently needs a team of experimental teachers. On the other hand, the high-level experimental teachers' team can promote the healthy development of the application-oriented university. Hence, we have every reason to believe that in the new era of Higher Education in China, with the construction and development of the application-oriented university, the problems confronted by the team of experimental teachers will be gradually solved, difficulties will be overcome, finally, the "dual roles, dual capabilities" team of experimental teachers will be developed vigorously.

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