

Establish Open Computer Laboratories to Cultivate Innovative Talents and Promote Local Economic and Social Development

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Abstract. With the continuous development of higher education and talent training mode in China, the construction of open computer laboratory has become an important practice base for talent training in universities and promoting local economic and social development. How to manage and maintain the laboratory scientifically and effectively and provide a good and innovative learning environment for teachers and students is an important problem that all managers of open computer laboratories must face and urgently need to solve. In this paper, we take the construction of open computer laboratory in Pu'er University as an example, combined with the social requirements for the cultivation of innovative talents and the service of local economy, and explore new ideas for the construction of open computer laboratory to promote the cultivation of innovative talents and the development of local economic communities, which has a certain reference value for the construction of computer laboratory in local comprehensive universities.

1 Introduction

The construction of open computer laboratory is the guarantee to complete experimental teaching and scientific research work [1]. Experimental teaching and laboratory construction are the top priority in evaluating the teaching quality and talent training of universities. The construction of open computer laboratory can not only provide a good environment for cultivating innovative technical talents, but also provide support for the scientific research development of its universities. The open computer laboratory is an important practice place for cultivating excellent talents with strong practical ability, high practical ability and strong creative thinking of college students in the new era. It is also an important platform for social services and university enterprise with industry university research cooperation [3]. Strengthening the construction of open computer laboratories and personnel training can not only cultivate a group of excellent talents with high innovation ability and excellent technical reserves for the society, but also improve the competitiveness and influence of colleges and universities in the same industry. Therefore, accelerating the

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construction of open computer laboratories has important significance and role in promoting local economy and cultivating innovative talents.

According to the needs of regional economic development and social progress, Pu'er University will build an open computer laboratory, provide open and personalized services to the society, promote the development of local economic construction, comprehensively improve the quality of talent training, speed up the construction of platforms, enhance the ability of independent innovation, vigorously promote the integration of industry, university and research, and strive to solve major theoretical and practical problems in local economic and social development. It can provide strong talent and intellectual support for local economic and social development. In this paper, we take Pu'er University as an example to explore the methods and countermeasures for the construction of open computer laboratories in local colleges and universities.

2 The significance of the construction of open computer laboratory in universities

2.1 The open computer laboratory is an important practice base for cultivating innovative talents

Colleges are the main battlefield for cultivating talents. The construction of open computer laboratories can enhance the training quality of innovative scientific and technological talents in their regions [2]. The open computer laboratory aims to cultivate "high, precise and advanced" computer professionals. Experimental teaching is a crucial link in computer teaching. The open computer laboratory has sufficient experimental equipment, strong teachers and good practice environment, which provides strong support for the cultivation of innovative talents [5]. At the same time, the open computer laboratory can not only meet the personalized needs of students, but also bring practical experience. It is an important practice base for experimental teaching. Computer laboratory is a teaching platform that combines theory with practice. It is an important base for cultivating students' innovative ability, practical ability and scientific research ability. It will become an important carrier for cultivating innovative scientific and technological talents, and has made great contributions to the development of local, social economy and science and technology. In addition, in order to better enhance the ability of innovative scientific and technological talents, open computer laboratories can provide them with a research place to develop more scientific and technological achievements in an excellent experimental atmosphere. It should be said that the construction of open computer laboratories is the main carrier to condense and stabilize innovative scientific and technological talents and cultivate computer technology leaders [7]. Therefore, the construction of open computer laboratories can fully mobilize the exploration consciousness of innovative scientific and technological talents on scientific and technological knowledge, and can combine the current social and market needs, so that the direction of their experimental research can be more satisfied with the regional economic characteristics and social development needs, and enhance the local characteristics of the location of computer laboratories. On the other hand, the role of university computer laboratories in the research topics of national and local economic construction is very huge. It not only allows innovative scientific and technological talents to access basic technical research, but also enables them to carry out original innovation on its basis, effectively improving the innovation awareness and level of innovative scientific and technological talents, and laying the foundation for promoting local economic development.

2.2 The construction of open computer laboratory is conducive to enhancing the consciousness of service development and strengthening the function of laboratory in serving the society

Colleges undertake three major tasks: talent training, scientific research and social service. At present, the social functions undertaken by universities are increasingly prominent. How to better integrate into the society, based on the local economy and serve it has become an important topic for schools at all levels and all types to improve their functions [4]. On the one hand, through the construction of open computer laboratories, science and technology can be transformed into actual production. For example, information technology can transform traditional industries and provide corresponding rectification plans for local economic development. Through continuous research in the computer laboratory, computer-aided design and numerical control technology can be used to provide modern information technology and application-oriented talents for the local manufacturing industry. On the other hand, the open computer laboratory is an important place to carry out the public basic courses of computer, and a practice base to improve the computer theory level and operation ability of college students, especially non computer majors. Colleges cooperate with industries, enterprises and institutions to hold and undertake all kinds of examination activities, training projects, academic conferences, etc., so as to achieve technological progress, resource sharing and cultural integration, promote regional economic development, and bring social and economic benefits to local governments.

3 Principles to be followed in the construction of open computer laboratory

The construction of open computer laboratory is mainly to meet students' learning needs, provide students with opportunities to practice and create a good learning environment. Therefore, in the construction of open computer laboratories, the universities should build laboratories with rich experimental functions and scenario simulation according to the requirements of computer curriculum objectives, and ensure the reasonable layout of laboratories. The software and hardware used can meet the current level of information technology; so as to ensure the progressiveness of the information technology students learn [6]. At the same time, it is also necessary to continuously improve the system security, strengthen the system management, and provide students with better teaching services.

3.1 Follow the principle of openness

The construction of open computer network laboratory should follow the principle of openness. In addition to daily experiments, the laboratory should also be open to teachers and students in other spare time. The experiment management system can divide the daily test time, and partially realize the whole day opening. It also provides students with the function of making an appointment in advance, so that students can reasonably arrange the experimental time of this study, carry out experiments according to the appointment, cultivate students' time management ability, and optimize the order of the school laboratory. The laboratory should ensure the openness of the experimental content, provide students with daily teaching experiments, expand teaching experiments, etc., not only meet the requirements of students' daily learning, but also meet the requirements of students who need to expand their knowledge. According to the differences of school majors, the

universities can set up experiments with different professional characteristics and difficulty coefficients to fully meet the learning needs of students of different majors.

3.2 Follow the principle of progressiveness

With the rapid development of advanced network technology, the open computer laboratory of universities should also keep up with the pace of the times and use the most cutting-edge technical theory, experimental content, experimental equipment, etc. Relevant managers should also always pay attention to the trends in the field of computer technology and update relevant technical equipment in time to ensure the progressiveness and practicality of students' knowledge.

3.3 Follow the principle of stability

Nowadays, there are certain defects in the network and computer system. The university should strengthen the safety construction of the open computer laboratory, ensure the stability of the system operation, improve the self-healing ability of network faults, and minimize the network delay, so as to avoid the interference of other experimenters and experiments during the experiment, and ensure that the new system will not affect other systems being applied during the test and operation.

3.4 Follow the principle of sharing

Computer laboratory is an open network information system, and the equipment must support the network protocol of international general standard. Different types of network equipment and networks can be connected through this protocol. Even if multiple networks need to coexist in the network, new network nodes can be added at will, which effectively improves the sharing of open computer laboratories and realizes the centralized management of experimental equipment and data in the laboratory.

4 The construction ideas and measures of open computer laboratory

4.1 The construction of open computer laboratory needs to increase and support multi-channel scientific and technological cooperation

The open computer laboratory is a key laboratory jointly constructed by the government and universities [8]. Its high-level research atmosphere and innovation platform provide an "open, mobile, joint and competitive" cooperation channel for multi-level innovative scientific and technological talents [9]. Therefore, the relevant management departments should increase the management of open computer laboratories. We should attract more high-quality scientific and technological talents to participate in high-level computer experiment activities through a lot of publicity. In addition, the open computer laboratories should increase cooperation with society and enterprises to study and solve problems in enterprise production activities, so as to maximize support for local economic development. Through the cooperation and exchange with other computer laboratories, we can provide the latest academic theory for the cultivation of innovative scientific and technological talents, so that more excellent scientific research talents at different levels can form a close cooperative relationship in the open computer laboratories, give play to different advantages, improve the innovative vitality of innovative scientific and technological

talents, and promote the improvement of computer scientific research level in local colleges and universities. Under such a form of multi-channel cooperation, open computer laboratories can produce more scientific research achievements and innovative talents, enhance the academic influence of their laboratories, and lay a foundation for computer professionals and innovative scientific and technological talents in universities to participate in more international scientific research projects. According to this development situation, the open computer laboratory not only carries the task of talent training, but also needs to undertake the task of scientific research and promoting local economic and social development.

4.2 The construction of open computer laboratory needs to combine the characteristics of colleges and Universities

The construction of open computer laboratories needs to be combined with the characteristics of universities to make them promote discipline construction [10]. In the process of developing the open computer laboratory, we should formulate a reasonable development and construction mode according to the leading advantages of universities in the computer field. At the same time, it also needs to compare its leading advantages in the field with other laboratories, and summarize the development direction and prospects of its laboratory [11]. It needs to focus on the intersection between its field and related disciplines, so that more outstanding talents can have a thinking collision in an academic intersection research, generate new ideas, and take its new ideas as the starting point for scientific and technological innovation. In such a process of academic research and experiment, it can better promote the progress of other disciplines in universities, and also improve the thinking of innovative scientific and technological talents. In addition, the construction of open computer laboratories can provide a certain optimization guarantee for the development of universities. Because the construction of open computer experiments requires a lot of money, which is mainly used for the configuration of related software and hardware. With the software and hardware configuration of high-tech, it plays a great role in improving the teaching quality of related disciplines and other disciplines. Moreover, the laboratory can also be used to carry out research and research on some major science support projects, which will drive the updating of knowledge and new technologies in its universities, so that its universities can have the most cutting-edge academic theories and innovative achievements in computer science. Under the influence of this academic atmosphere, it not only drives the development of talents in related disciplines in universities, but also provides a place for its innovative scientific and technological talents to expand their research. To a certain extent, it can break the traditional training mode of innovative scientific and technological talents, so that innovative scientific and technological talents can participate in more emerging discipline research.

4.3 The construction of open computer laboratory needs to improve the management system and change the management consciousness

First of all, we should formulate a sound computer laboratory management system, so that there are rules and laws to follow, the system should be detailed and reliable, do not talk nonsense, and let teachers and students know what to do and what should be paid attention to. In daily experimental classes, teachers and students should strictly abide by the management rules of the laboratory, act together, reach a consensus between teachers and students, and form a good cycle [15]. Computers are prone to failure in the process of use. In order to grasp the current situation of equipment in time, the laboratory can install equipment operation cards on each machine, and teachers and students can register the

problems in operation on the cards, so that managers can repair equipment faster and better to ensure the normal progress of teaching. Secondly, we should change our consciousness. It is not enough to rely on the system alone. In order to maintain a good laboratory environment, we should also change our thoughts and strengthen the management consciousness of teachers and students. Teachers and students should have a full understanding of the computer laboratory environment and safety management, not a simple fire prevention and waterproof, but a higher-level management of the system safety of the computer itself [15]. In this way, teachers and students can work together to do a good job in the management of computer laboratory.

4.4 The construction of open computer laboratory needs to strengthen the information communication and cooperation between experiment and teaching

As we all know, computer science and technology are developing rapidly, and hardware is frequently upgraded. With the development of hardware, the upgrading and development speed of computer software is also very fast [14]. There is more and more computer software of various types, with increasing capacity and complexity. However, the students have different majors and different needs for software, which leads to a large number of software in a computer. Sometimes various versions will conflict or the same software will be loaded and unloaded frequently. In order to solve this problem, the laboratory managers can update and adjust the software of the laboratory before the beginning of each semester, communicate with the teachers in time, understand the software they need, and uniformly adjust the software configuration according to the new experimental teaching needs and the laboratory hardware environment. In the installation process, the network simultaneous interpreting technology [12] can be used to quickly copy the system installed on one computer to other machines through the network. The network administrator does not need to configure the network and install the system on each machine, which greatly improves the work efficiency of batch updating software on the LAN.

5 The construction of open computer laboratories to cultivate innovative talents has achieved remarkable results

The construction of open computer laboratories is the need to promote the cultivation of innovative talents and enhance the service of local economic construction [13]. On the one hand, it can actively improve students' innovation ability, improve their practical operation level, and cultivate students to become high-quality network technology talents who can skillfully use advanced computer technology; On the other hand, it can undertake a large number of community tasks, serve local economic construction and promote community development.

Laboratory opening is an effective method to cultivate students' comprehensive practical ability and innovative spirit, and an objective requirement to achieve the goal of talent training. There are 10 open computer laboratories in Pu'er University, with a total of 580 computers. Since its establishment, the computer laboratory has been basically open all day and has a very high utilization rate. Its primary task is to undertake the teaching of basic computer courses, some professional courses and computer related general elective courses in the whole school. The normal teaching use of public computer rooms in 2019-2020 academic year alone has reached 8680 class hours. Every academic year, nearly 3000 students use the public computer room to study in the course of College Computer Foundation alone. On the basis of ensuring normal teaching, the open computer laboratory

also undertakes other important functions, such as training students' information processing ability, enriching students' amateur cultural life, carrying out students' ideological and political education and college students' mental health education, and so on, which has transported a large number of information technology innovative talents for local economic and social development.

The construction of computer laboratories has promoted the connection between Pu'er University and the local economy of Pu'er, carried out the task of two-way socialized services with the society, and provided talent and resource guarantee for promoting the benign interaction between universities and local governments. In the past two years, the university has used the open computer laboratories to organize and hold various software, electronic and other student competitions and qualification certification, such as ACM-ICPC international undergraduate program design competition, National Undergraduate Mathematical modeling competition, National Undergraduate Electronic Design Competition, Chinese undergraduate computer design competition, and has achieved excellent results. It stimulates students' interest in learning, changes passive learning into active learning, and actively enters the open computer laboratories to prepare for their own examinations and competitions for autonomous learning. In addition, every year, nearly 2000 candidates take part in the national computer grade examination in our school, complete the training tasks of nearly 1300 graduates' employment, and complete the teacher training of nearly 500 people.

At the same time, it has provided a lot of services to the local society and has undertaken several training courses for the backbone of e-commerce and computer network business of civil servants in Pu'er administrative organs. For example, it assisted the College of continuing education in completing nearly 3000 examinations and training, and undertook the final examination of nearly 1000 students in various courses of the Open University, assist 199 vocational skill appraisal institute to complete the training of office application software, assist the enrollment and employment office to complete the training of "e-commerce operation management", "Network Entrepreneurship", "SYB entrepreneurship", etc., with a total of nearly 1000 people, assist the enrollment and employment office to complete the Yunnan Provincial post-secondary examination, with a total of nearly 1300 people, and assist Pu'er housing and Urban Rural Development Bureau to undertake the task of Yunnan provincial secondary constructor vocational qualification examination, with a total of nearly 2000 people participating in the examination.

Therefore, by building open computer laboratories, Pu'er University has strengthened its strength in cultivating innovative talents and serving the local economic and social development, which is needed for the economic construction and innovative talent training of Pu'er City and even the whole Yunnan Province.

6 Conclusion

The construction of open computer laboratory can not only cultivate the practical ability of innovative scientific and technological talents, but also greatly promote the improvement of teaching quality and discipline construction. The effectiveness of open computer laboratory construction determines the teaching quality and scientific research level of local comprehensive universities to a certain extent. Actively reforming the experimental teaching management mechanism, building a new experimental teaching curriculum system, increasing the investment in laboratory construction and experimental equipment, and encouraging experimental teachers to innovate teaching ideas and methods will effectively promote the process of experimental teaching reform in local universities. It will also greatly enhance students' innovative consciousness and innovative practical ability, and ensure high-quality innovative and practical talents to serve the local economy and society.

As a local comprehensive university, Pu'er University aims to build a high-level research university with distinctive regional characteristics, and attaches great importance to experimental teaching reform and laboratory construction. In order to improve its comprehensive strength, the university will continue to explore experimental teaching reform measures, strive to build a high-level laboratory, and contribute to the reform and development of local higher education.

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