Teaching Management and Open Sharing of Economic Management Laboratories in Universities

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Abstract

Higher education is related to the talent training and long-term socioeconomic development of China. Practical teaching is a critical step in talent training for the achievement of higher education, while laboratories are the major carrier of practical teaching. Hence, construction of a university laboratory high-quality management system is extremely important. Since the laboratory construction from economic management in ordinary universities is relatively lagged behind, the existing laboratories can only meet the requirement of normal practical teaching. In this study, the situation of open sharing of economic management laboratories in universities was analyzed. The roles of open sharing of economic management laboratories in talent training, scientific research and social services were elaborated from four aspects: innovative experiment curriculum provision, open sharing of instruments, strengthened instrument maintenance and management system, and construction of science-based experimental technician incentive and evaluation system.

Keywords

University laboratory; Economic Management Major; Teaching management; Open sharing; Instrument and equipment.

1. Introduction

Economic management is the most core course in professional curriculum provision of Chinese universities, and normally consists of several categories, including management science, tourism management, public management, and international business. The major of economic management is a main source of high-quality economic management talents in China. The sudden scale expansion inevitably brings about problems of teaching quality and talent training quality. Recently, the Ministry of Education has released relevant documents many times, and put forward some suggestions on the problem of teaching quality in undergraduates of universities. Particularly, the strengthened cultivation of practical abilities is the consensuses between governmental administrations and university educators. Nevertheless, the practice step in universities is always imperfect. To improve the practical operation abilities, it is a consensus to establish various laboratory laboratory teaching activities for all universities [1] [2] [3].

The goal of talent training in the economic management major is to cultivate corporate management talents that closely cling to the reality. If graduates majoring in economic management cannot adapt to social demands or their hands-on abilities do not join with the practical applications of enterprises, this is actually a failure of education. The supply and demand trouble in economic management talents has always been a hot social issue. From the aspect of supply, a large number of college graduates cannot find appropriate job positions, but from the aspect of demand, the employing affiliations often complain they cannot find the
practicable talents who satisfy corporate requirements. To meet the developing requirements of the society and economy, the cultivation of economic management professionals should focus on theoretical education and on improving the quality and level of laboratory teaching [4-6]. However, the construction levels of the majority of university laboratories are unsatisfactory, so the experimental teaching quality must be urgently improved. Laboratory quality management is the core content of laboratory teaching management and the key of laboratory survival and development. Laboratory construction and development can be accomplished and personnel training quality can be ensured only when the laboratories and laboratory teaching meet quality requirements. Hence, how to construct laboratory quality management systems, to reform laboratory teaching contents and improve experimental teaching quality are the issues to be urgently discussed and solved.

2. Analysis about Teaching Management and Open Sharing of Economic Management Laboratories in Universities

2.1. Economic Management Experimental Curriculum Provision Is Different From Other Curricula

The contact with professional experimental equipment is rare, and the contents of practical teaching projects are monotone. Students from higher grades cannot understand the basic conditions of experimental instruments and equipment after school and can only contact them during experiments, so that the students have no solid knowledge or excellent practice ability. Moreover, teachers only contact for short time with and are much unfamiliar with laboratory equipment, and are inconsiderate with experimental design or are insufficiently prepared for experiments. As a result, students cannot complete the formulated experimental projects during classes. In the conventional laboratory teaching pattern, the laboratory teaching contents involving students are monotone, and are mainly validatory experiments, rather than designing, comprehensive or practical experiments. Unluckily, such experiments cannot efficiently instill students with problem analyzing and solving abilities.

Moreover, the majority of experiments are concentrated learning. Under the conventional laboratory teaching pattern, the teachers in charge are responsible for designing experimental process and steps, so the whole class come to do experiments in the appointed laboratory at the planned time in the class table. Since the laboratory teaching time is relatively concentrated and the number of instruments and equipment is limited, the students do experiments basically in groups or in turn [7]. Hence, the experimental instrument and equipment are used frequently during the laboratory teaching time, but outside the planned teaching time, the students generally have no chance to understand or get familiar with the experimental instrument and equipment.

2.2. Lagged Instrument Management Pattern, Unscientific Use and Maintenance, and Inability of Efficient Running

The large-scale instrument and equipment in some universities are still dependent on artificial management [8,9], and the reservation and use are conducted normally face-to-face or by phone. Moreover, the testing schemes are confirmed by face-to-face communication, and the testing records are registered on paper. Such conventional artificial, paper-based and static management patterns are already unsatisfactory to the real demands of research laboratories, and intensify the difficulty in equipment management and hinder the open sharing and efficient running of equipment.

Large-scale instrument and equipment in research laboratories are highly exclusive and have high technical contents, and are mainly used by graduate students. Because of the large fluidity of graduate students, equipment failures may very likely occur due to inappropriate
maintenance and use. Moreover, large-scale instruments are mostly imported from foreign countries and their operation and maintenance costs are expensive [10,11]. Some large-scale instruments even should be maintained periodically. These costs are very huge and some research laboratories of local universities can only use but cannot maintain large-scale instruments, owing to the shortage or deficiency of auxiliary funds. Moreover, some instruments have strict requirements for reagent consumables, and the auxiliary reagents and consumables of large-scale instruments are very expensive. Because of the shortage of funds, some research staff can only buy but cannot use such instruments. Furthermore, the large-scale precision instruments of some research laboratories are bought for specific issues and the testing schemes are highly customized, which complicate the efficient running of such instrument and equipment.

2.3. Lack of Full-time Laboratory Staff, Imperfect Instrument Management Systems and Open Sharing Incentive Systems

The technical and professional levels are largely different among experimental technicians, since the members of experimental staff come from various sources and are compositionally complex [12,13]. Recently, though the joining by masters and doctors to some extent enriches the experimental technician staff, there are still a number of members from technical schools, and skilled workers. People from different education levels and different age groups are largely divergent in their views, professional levels, consciousness of services, state of mind, development directions, goals, pursuits and cultural levels.

The experimental positions and responsibilities are indefinite, and the evaluation systems are imperfect. The working positions of experimental technicians are very normal to some teachers, and many technical works are ignored and looked down. The jobs of experimental technicians usually can only be finished by those with the same technical levels as theoretical teachers, but some complex and tedious works are often ignored by others [14]. Because of unclear orientations, the responsibilities of experimental technicians are indefinite. The majority of works undertaken by experimental technicians are usually daily equipment maintenance and the guarantee of safe operation. In fact, all experimental technicians suffer very severe pressures. If the jobs of experimental technicians are not approved, their enthusiasm will be largely reduced.

2.4. Unscientific Laboratory Management

At present, the leaders from departments and schools understand laboratory teaching very differently from experimental teachers, so the requirements of each experimental technique position differ to some extent. Moreover, some experimental technicians do not sufficiently understand their own positions, and laboratory management is not standardized, so the management differs among different laboratories of the same university. Some laboratories are affiliated to second-level institutes or staff rooms, but the managers all have their own thoughts and do not formulate any unified laboratory management rule or regulation. Some laboratories are even encountered by multi-department management, repeated management, conflict of rules and regulations, and other problems.

Because of the large gaps in welfares between experimental technicians and full-time teachers, the high-level experimental teachers will find opportunity to join in teachers or other higher-salary positions. Consequently, the overall quality and levels of experimental technicians are very low, and their experimental operations are unproficient, leading to the lack of appropriate talent teams. The effect of "senior technicians guiding and helping junior technicians" cannot be fully achieved [15]. Experimental technicians have the chance of out-of-school learning or systematic training organized by their universities. The advanced education and operation
training of experimental technicians are less valued. They have rare chance of communication with the outside world, so their operation levels can be hardly improved.


3.1. Improved and Perfect Laboratory Teaching

The increment and improvement of teaching quality in economic management laboratories of universities should be conducted from multiple aspects, including laboratory teaching management, planning, and laboratory construction. The concrete measures are discussed below.

Experimental plans should be improved, and experimental project management systems be established. As for experimental planning, the laboratory teaching outline and experimental plans must be revised, and experimental instructions and laboratory report contents/patterns be compiled accordingly. These modifications will help experimental teachers and students in conducting experiments, strengthen experimental process management, and improve the experimental teaching quality.

Experimental project management systems must be established. So far, the experiment curricula of economic management schools in universities all set corresponding experimental projects, and list in experimental plans and experimental class tables. Experiments must be conducted in accordance with experimental projects. On one hand, the works of laboratory teaching management are standardized thereby, and on the other hand, teachers and students have rules to obey, which gradually improve and modify the management levels and quality of laboratory teaching.

The ways of laboratory teaching must be changed. To improve the learning efficiency and ability of students, the teaching clues must be changed, so the "teachers teach and students learn" is changed to "teachers and students interact", which improves the learning enthusiasm of students. Experiment preparation is an excellent way. On one hand, teachers can identify problems in time and thereby guide students in a target-oriented way, and on the other hand, the initiative and enthusiasm of students can be mobilized. Economic management laboratories require students to explain the objectives, contents and steps of experiments before each experiment, and assess the conducts of students, so that the students can be familiarized with the contents, objectives and operational steps of experiments. The laboratory instructions should be focused on the key steps and attentions.

The management of experiment operation steps must be strengthened. The experimental operations should fully reflect the hands-on abilities of students. Hence, students should be guided to think about the phenomena and problems occurring during experiments. In the meantime, the authenticity and accuracy of experimental data must be ensured, and any student with counterfeit or falsification of experimental data must be strictly punished. Moreover, the laboratory teaching means must be reformed to mobilize the learning enthusiasm of students, and the various experimental results be processed on computers. In this way, the manual operation abilities of students can be trained and strengthened, which will improve their practical operation abilities, professional skills and competence, and competitiveness.

3.2. Instrument Open Sharing, Perfect Maintenance and Management Systems

The joint idea of many university research platforms is to maximally play the roles of instrument and equipment in scientific research and social services. The assets management departments and other relevant functional departments of universities must strengthen the purchase management of large-scale instruments and equipment, and establish school-wide
instrument and equipment management platforms for comprehensive planning and appropriate allocation, which all will improve the use efficiency and open sharing of instruments. Relevant rules and regulations for standardized laboratory open management must be established, and thereby rules and regulations can be orderly conducted that accord with the real situations of universities and ensure the open management patterns of laboratories.

As for the maintenance and management of large-scale instruments in research laboratories, firstly, the technique files, operation rules, attentions, relevant access and use systems, and daily maintenance/management systems of large-scale instruments must be improved. The technique files of instruments mainly include the use and maintenance manuals of instruments, and the debugging and maintenance records/reports, which all must be consulted any time. The operation rules and attentions should be pasted to striking positions of the instrumental operation zone, which will reduce misoperation or misconducts of operators. Relevant access systems must be established, so that only those with qualified training and examination are allowed to use. Attention should also be paid to the daily maintenance of large-scale instruments, such as pipe cleaning, and replacement of consumables. The manufacturers should be contacted to send engineers for periodical inspection and maintenance.

3.3. **Construction of Science-Based Laboratory Technician Incentive and Evaluation Systems**

Appropriate multidimensional and quantitative examination incentive systems must be constructed, including the converted scores of laboratory teaching, laboratory management, research production award-winning, and other workloads. The examination and assessment system mainly involves work performance and exhibition, technical exploitation and practice, attitude and ability, student assessment, and teacher assessment. Objective evaluation of laboratory technicians contributes to improving the laboratory teaching level and experimental skills of technicians, so they can better meet the requirements of laboratory teaching and experiment preparation.

The bidirectional channel between teaching research and experimental skills must be opened up. To better set up an experimental technique team, the bidirectional channel between teaching research and experimental skills must be opened up on basis of the existing managements. Some teachers of experimental skills have outstanding research abilities and thus are suitable for research and teaching jobs. While meeting relevant requirements, they can apply for transfer to the teaching and research position. Moreover, those with relevant professional knowledge and practical operation abilities and willing to be devoted to experimental skill jobs should be allowed to be transferred.

Laboratory technician teams must be strengthened. The overall coordination and development of laboratory technician teams must be improved. Laboratory technicians must actively participate in or host research tasks, and enthusiastically take part in innovative laboratory teaching research and development, which will help to display their own values. The enthusiasm of laboratory technicians to conduct technical innovations must be mobilized, and they must be encouraged to publish papers on laboratory teaching and management. Those competent teaching staff can be transferred to laboratory technical positions. The orientation of making research papers the major evaluation index of laboratory technicians must be altered, and new relevant systems that focus on the experimental skills and experimental innovativeness must be established.

4. **Conclusions**

Different from engineering laboratories, economic management laboratories are unique and emphasize computer application ability, software operation ability, and comprehensive ability
of experimental knowledge application. Open sharing of laboratories is a new laboratory teaching pattern, in which the laboratory resources and teacher resources are utilized to promote laboratory teaching reforms. As a result, the goals of cultivating new-era universities to cultivate developmental, versatile and innovative technical talents to meet social demands can be achieved. However, the open sharing of laboratories will bring many problems and troubles, which must be handled jointly by schools, laboratory managers, teachers, laboratory technicians and students. While the internal laboratory teaching of schools is met, the opening of laboratories to the society can be explored, which will enlarge the influence of universities and professional laboratories. This will cultivate skilled talents with knowledge, abilities and high-quality in schools, and will cultivate skilled talents to the society.

References