The Research on Reform in Practice of Information and Computing Science Teaching

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Abstract. Explore and reform from teaching content and teaching methods of information and computing science, combined with the training mode of information and computing science, according to the actual characteristics of Tianjin University of Finance and Economics and the practice teaching current situation of information and computing science. the reform can enhance students' practical ability, innovation spirit and team cooperation ability, and improve the quality of employment, so that students can be adapt to the society faster and better.

Introduction

The Department of information and computing science was a new profession issued by the Ministry of education in 1998. It was formed by the intersection of information science, computational mathematics, and operations research and cybernetics[1]. information and computing science major in Tianjin University of Finance and Economics has enrolled 17 years since 2000. At present, the decrease in the number of enrollment; the employment situation from the original 100% to the current 90% employment employment as before; found that the job is not social lack through to other schools enterprises and institutions, but students are not suitable for the job. Through investigation and study, it is urgent for practical experience and practical ability to work in the present position. Therefore, teachers of information and computing science should make great efforts to carry out the reform and exploration of practical teaching.

Present situation of practical teaching of information and Computing Science

From the national point of view, as the information and computing science has been established for a short time, there are still some problems in the practice teaching of information and Computing Science in Institutions of higher learning.

Firstly, the orientation of information and Computing Science is not clear and has no special features in many universities. For example, most universities in Tianjin have set up information and computing science[2], but due to the lack of a unified teaching standard, colleges and universities have encountered such problems as the orientation of professional orientation and the establishment of specialized curriculum system.

Second, most colleges and universities practice teaching content and methods are relatively lagging. The main purpose of experimental teaching is to verify the curriculum theory. The teaching method is single and the content is not updated fast. It is difficult to form a perfect practice teaching system.

Third, the experimental teaching resources are insufficient and the experimental equipment is obsolete.

In the face of widespread information and computational science problems and social needs, improve the competitiveness of the graduates is the issue of increasing a major indicator of the competitiveness of graduates is the ability of practice. it is necessary to strengthen students' practical teaching links in order to enhance students' practical ability,. Theoretical knowledge can only be
transformed into creativity if it is applied to practice. Therefore, the practice teaching is a very important step to improve the quality of students.

**Characteristics of information and computing science at Tianjin University of Finance and Economics**

Aiming at the problems existing in the teaching of information and Computing Science in Tianjin University of Finance and Economics, the Department of personnel of Tianjin University of Finance and Economics, information and computing science graduates and employers are the main focus of the investigation, comparative study of the successful experience and practice of information and Computing Science Teaching in Colleges at home and abroad. At the same time to reform actively study the specialty of teaching and practice of information and computing science, mainly from the experimental teaching, curriculum design, engineering training, production and graduation practice and graduation design aspects of efforts to cultivate students into talents of solid foundation.

**Contents and Methods of Practice Teaching Reform**

**Practice Teaching Content**

More than 500 universities are provided with information and computing science[3], in Computational Mathematics and applied mathematics as the research direction, information and computing science revised the personnel training mode[4], according to the new version of talent training mode developed a practical teaching plan. The new model of information and computing science personnel training is shown in figure 1[5].

![Figure 1. Professional training mode diagram of Information and Computing Science.](image)

According to the training model of information and computing science, a practical teaching system of information and computing science has been formulated.

**Practice Teaching Method**

In order to improve the quality and effectiveness of teaching practice, information and computing science specialty practice teaching system construction is the main line of understanding basic
knowledge ability and comprehensive competence, cultivate the sense of innovation, on the basis of
the main practice teaching is divided into 4 levels.

The basic experiment: is the basic experiment cultivating students' basic ability, help students understand and grasp the basic principle of corresponding curriculum, and to verify the correctness of the basic principle, basic ability training of students. For example, it can be done through the experiment of the corresponding course.

Comprehensive experiment: on the basis of mastering the basic principles and basic methods, the comprehensive application of one or more specialized knowledge to solve practical problems, in order to help students improve the comprehensive application ability. For example, it can be completed through the curriculum design of the corresponding courses.

The system experiment: that is to improve the students' ability to stage, ask students to use the knowledge, to further improve the comprehensive application ability of the students after the two stages of training, teachers give the actual project, the students complete the experiment under the guidance of teachers. For example, students can do it through cognitive practice and engineering training.

Innovative experiment: it is the cultivation of innovation ability of students, at this stage, students can research, design and implement solutions according to the hot topic, so as to cultivate students' innovative spirit and ability of sustainable development. For example: students can to the enterprise for production practice, graduation practice and graduation design.

Training on Comprehensive Practice and Quality

Organize and support students to participate in different types of scientific research activities, such as undergraduate science and technology competition at all levels, mathematical modeling contest and so on. Enhance the students' innovative spirit, scientific research ability, practical ability and organization and coordination ability, and comprehensively improve the comprehensive quality of students.

Promote the cooperation of school and enterprise actively, let the students into the enterprises as soon as possible, enhance their own ability, at the same time, train the students' practical ability, teamwork and innovation ability, occupation spirit and ability to adapt to society through the cooperation of school and enterprise as soon as possible.

Improve the Overall Quality of Teachers

In the field of information and computing science, the training model of application-oriented is advocated, and the combination of knowledge imparting and practice ability is emphasized. Therefore, teachers are required to have profound professional knowledge and advanced vocational skills. Can improve themselves through to the elite class and to the famous enterprise testing exercise, but also to actively participate in technological innovation research and exchange to expand knowledge and improve combat capability.

The Achievements of Practice Teaching Reform

Through the teaching reform of practice, the comprehensive ability of students in information and computing science has been greatly improved in various aspects, and the employment problem has been greatly improved. A survey of students of information and computing science, and feedback summary, as shown in table 1.

As can be seen from the table, graduates are very popular with units, welcomed by all aspects of the ability of the unit has been affirmed, the reform achieved initial success.
Table 1. Summary table of feedback results of employers.

<table>
<thead>
<tr>
<th>Index name</th>
<th>Good (Percentage)</th>
<th>Preferably (Percentage)</th>
<th>Commonly (Percentage)</th>
<th>Poor (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehensive quality evaluation</td>
<td>57.23%</td>
<td>40.36%</td>
<td>2.41%</td>
<td>0.00%</td>
</tr>
<tr>
<td>working attitude evaluate</td>
<td>58.12%</td>
<td>39.53%</td>
<td>2.35%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Professional technical ability</td>
<td>41.03%</td>
<td>53.76%</td>
<td>5.21%</td>
<td>0.00%</td>
</tr>
<tr>
<td>team spirit</td>
<td>83.16%</td>
<td>14.23%</td>
<td>2.61%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Professional dedication</td>
<td>64.32%</td>
<td>33.16%</td>
<td>2.52%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Business level</td>
<td>36.66%</td>
<td>57.12%</td>
<td>6.22%</td>
<td>0.00%</td>
</tr>
<tr>
<td>practical ability</td>
<td>47.54%</td>
<td>45.67%</td>
<td>6.79%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Ability to work independently</td>
<td>39.62%</td>
<td>49.44%</td>
<td>10.94%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Overall performance in the company</td>
<td>50.23%</td>
<td>47.15%</td>
<td>2.62%</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

Concluding Remarks

The social personnel needs for information and computing science diversified development trend with China's reform and opening up, promote the expansion of economic construction and international exchanges, many colleges and universities put forward practical teaching reform measures of their own, some universities strengthen the graduation practice and graduation design process, some emphasis on the university curriculum design and graduation design, some universities focus on experimental teaching and so on.

Through investigation and study, it is urgent for practical experience and practical ability to work in the present position. Therefore, teachers of information and computing science should make great efforts to carry out the reform and exploration of practical teaching. through the practice of teaching reform according to the actual in information and Computing Science of Tianjin University of Finance and Economics, students' comprehensive quality has been improved, the employment situation is good, I believe that will promote the "applied talents of deep foundation, strong ability, practice and high quality cultivation through the practice teaching reform. The reform can enhance students' practical ability, innovation spirit and team cooperation ability, and improve the quality of employment, so that students can be adapted to the society faster and better.

Information and computing science is a relatively new profession, we will continue to study how to optimize the teaching content, to improve the students' comprehensive ability, so as to adapt to social development.

References


