

Study on the Establishment of Professional Quality Evaluation System of Undergraduates

-Surveying and Mapping Engineering Major was Taken as an Example

Ma Yuntao

School of Transportation Engineering, Shenyang Jianzhu
University
Shenyang, China

Wang Jingli

School of Transportation Engineering, Shenyang Jianzhu
University
Shenyang, China

You Yingchun

School of Transportation Engineering, Shenyang Jianzhu University
Shenyang, China

Abstract—In the process of popularization of higher education, there is no fundamental change in the way of assessing and judging the undergraduates' ability in colleges and universities. It is an urgent need to establish a professional quality assessment system which can really reflect the undergraduates' professional ability. This paper discussed a new method to evaluate undergraduates' professional quality in colleges and universities. Surveying and Mapping Engineering undergraduate major was taken as an example. The evaluation content, on the basis of retaining the necessary examination, has been increased to the learning state, classroom participation, practice experiments and other aspects of the test. The evaluation methods included student self-assessment, student mutual evaluation and other means of performance evaluation. In addition to the course, it would also work with the league to review other aspects of the undergraduates. Therefore the professional quality evaluation system for undergraduates would be more complete, objective and all-round.

Keywords—Professional quality; Comprehensive assessment; Major in surveying and mapping engineering; Teaching system

I. INTRODUCTION

In 1999, China's colleges and universities begin to expand enrollment in large scale, and the enrollment of colleges and universities expanded rapidly. In just a few years, China has realized the transformation from elitism to popular. However, in today's popularization of higher education, there is no essential change in the way of assessing and judging the undergraduates' ability in colleges and universities. Each discipline has a single score, which is usually determined by test scores. Employers often have a preference for grades. Many undergraduates cram for a test before they take the test. But they don't have a deep understanding of professional knowledge. This has caused the student's professional level to decline year by year, lacking of learning energy, weak state, and employment difficulties and so on.

Colleges and universities' evaluation professional quality is

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very important. It is an important reference for selecting talents. But in fact, many employers are hiring undergraduates to think that certificate of achievement provided by the school and a resume that provided by undergraduates are not very valuable. Many school transcripts cannot reflect the practical skills well and cannot accurately represent the undergraduates' learning ability, especially for practical skills that require a higher degree of specialization. In addition, the practical experience provided by undergraduates lacks convincing proof. As a result, many employers have no choice but to take the test scores of the CET-4 & CET-6 which are not related to the major as the standard of the undergraduates' professional quality. During the learning process, undergraduates will also direct their learning behaviors according to the "baton" of job hunting.

Therefore, in the current higher education environment, it is urgent to establish a new quality evaluation system for undergraduates from the student's daily to the study attitude, from the professional level to the comprehensive ability to make a considerable evaluation to the undergraduates.

II. EXISTING PROFESSIONAL QUALITY EVALUATION SYSTEM AND DEFICIENCY

At the present stage, colleges and universities generally adopt comprehensive evaluation methods for undergraduates' evaluation. Among all the methods, the course grade occupied the main position, other aspects account for a certain proportion, but lack of objective quantitative criteria. It results in individual undergraduates feeling unfair. The phenomenon of "one volume" in the course achievement is widespread. In the final exam, undergraduates mostly adopt the style of surprise review. The examination results can't really represent his learning ability and comprehensive quality. The link of assessment for experiment and practice, because of inadequate personnel and equipment, it is difficult to achieve the purpose

of cultivating practical skills, and it is also difficult to evaluate justice and accuracy through limited staffs.

In view of these disadvantages, in China colleges and universities are seeking solutions according to their respective specialties. Related scholars and university tutors are making relevant exploration. In this paper, Kong Yang of Binzhou Medical University was in the evaluation of comprehensive quality of college undergraduates based on analytic hierarchy process.

The analytic hierarchy process was used to establish a corresponding evaluation model for undergraduates. Reasonable evaluation indexes were obtained. The undergraduates were evaluated comprehensively and accurately [1]. Li Hui of Huazhong University of science and technology used evolutionary algorithm to determine the weight of evaluation indexes in the paper that could improve the objectivity of index weight and provide a more reasonable assessment standard [2]. Jiang Yueping of Anhui administrative college in the student evaluation system, innovation in insurance professional personnel training, for example, the article put forward the "professional skills" as the core, to "knowledge, ability and quality" as the content of the comprehensive evaluation system [3]. In this paper, Xu Jianping of Guilin institute of technology constructed the system of evaluation of the quality of university undergraduates in the concept of modular college undergraduates' quality evaluation system. The evaluation contents were divided into five modules: ideological and moral quality, professional quality, humanistic quality, innovative spirit and practical ability. The five modules were evaluated separately and finally summarized into overall evaluation [4].

The above scholars from related colleges and universities have used different methods to evaluate undergraduates' professional quality from different perspectives. But there still exist some shortcomings and deficiencies. For example, it was difficult to construct a model, the model solution needed a lot of work, the variables were difficult to collect and the evaluation index was lacking of objective criteria [5-6]. All these problems need to be deeply discussed and studied so that the evaluation methods could be improved and the evaluation system of professional quality could be become more objective and more operable.

Now the grading of professional quality of undergraduates majoring in Surveying and Mapping Engineering is mainly based on classroom teaching experiments and practice experiments supplemented. In this teaching mode, the undergraduates' professional quality is evaluated by the scores, but the scores can not fully reflect the professional quality of undergraduates, which mainly embodies in the following aspects [7]:

(1) The theoretical teaching is emphasized. The proportion of hours of practice teaching is relatively low, so that undergraduates' ability to practice is relatively weak overall.

(2) The practice link mostly is the team project. The individual practice effect is not good, usually only a few members in a group are familiar with the practice content.

(3) In practice, the assessment is mainly based on group assessment, and the results are combined with individual performance. However, individual assessment items are less.

(4) The professional practice is mainly based on teaching practice and out of line with production practice. Thus practice is only for practice and there are fewer opportunities for undergraduates to contact practical projects.

Therefore, a simple test or practice of collective assessment methods cannot fully reflect the level of undergraduates.

III. THE IMPROVED PROFESSIONAL QUALITY EVALUATION SYSTEM

The specialty of Surveying and mapping engineering has the characteristics of strong practice, close combination with theory. The technical updates faster and the professional skill is higher required. Therefore, in order to assess the professional quality of undergraduates majoring in Surveying and Mapping Engineering, it should be begun from the aspects of theory and practice teaching, examination etc.

(1) By giving different questionnaires to undergraduates, teachers, undergraduates' administration, graduates and employers, to obtain all parties' opinions on the current course grading and professional quality evaluation methods, and find out its advantages and problems;

(2) Key reform curriculum grading system. Resolutely avoid the phenomenon that "examinations are the only criteria". Introducing the multi-link assessment method. For example, the digital mapping course, in addition to the examination paper, also increases the instrument operation, drawing skills and other aspects of the assessment;

(3) Reform the exam papers. Try to avoid "rote memorization" types of topics. Enlarge the comprehensive examination question. The test questions require a bias towards understanding, and it should be closely combined with production practice;

(4) The evaluation of practice link. We should establish a mechanism of "teacher evaluation, self-assessment, peer review, senior review". In the experiment, the teacher is responsible for the evaluation of the undergraduates. At the same time, in order to guide undergraduates comprehensively and alleviate the shortage of teachers. Each internship should select several excellent student assistant teachers from the senior class to guide the student internship experiment. These undergraduates are also responsible for the performance evaluation. After the internship, undergraduates are asked to rate themselves objectively every time. In the end, the same internship or group member of the experimental group rated each other anonymously. A variety of grading methods make the practice link more objective;

(5) The teacher and the management of undergraduates should more communicate and exchange with each other. Undergraduates should be judged from their own fields. At the same time, the way of comprehensive evaluation should be changed, the weight of student practice should be increased, and the proportion of written tests should be reduced;

(6) After various assessments, the information and scores are summarized and calculated by the student management department.

The technical route is shown below:

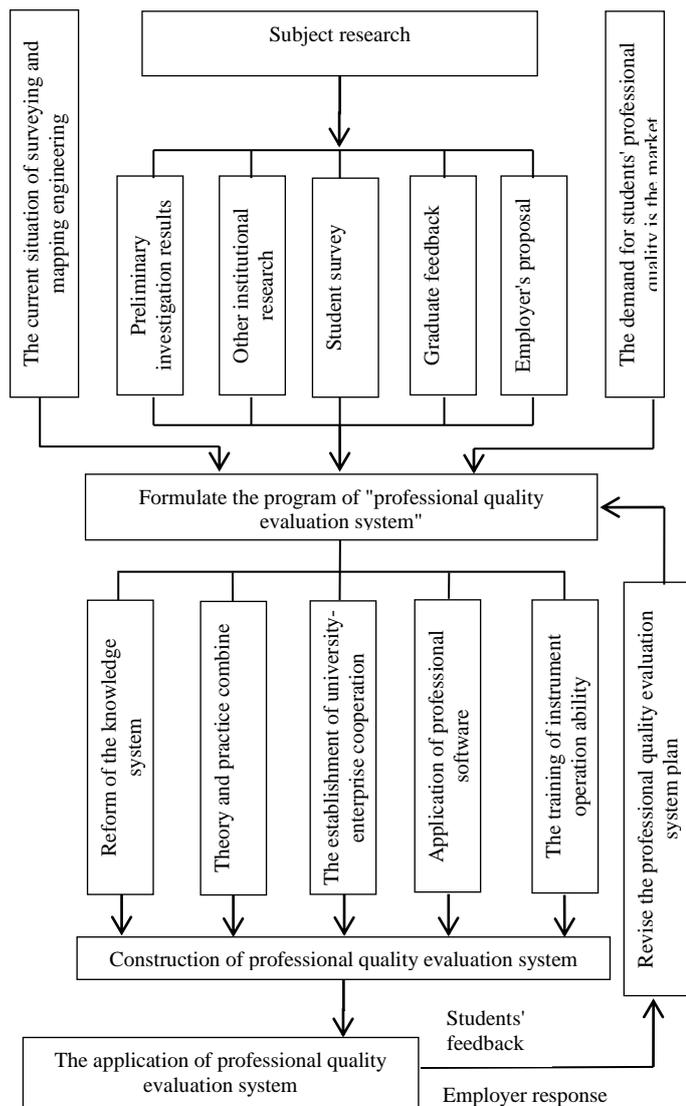


Fig. 1. The Technology Route of Professional Quality Evaluation System

IV. THE IMPLEMENTATION OF PROFESSIONAL QUALITY EVALUATION SYSTEM

A. Design the questionnaire

Different questionnaires are designed for different survey objects. For undergraduates and teachers in school, the way of grading and teaching methods of teachers should be taken. The standardization and operability of professional quality evaluation system should be focused on undergraduates' management departments. The employer should focus on the objective and authenticity of the professional quality evaluation system. The graduates should focus on the knowledge structure, the professional training program and other aspects.

B. Questionnaire.

This project takes the undergraduate major of surveying and mapping engineering of XXXX University as an example to carry out related research work. First of all, the undergraduates should be given questionnaires. The questionnaire is then distributed to graduate undergraduates, teachers and undergraduates. Finally, through door-to-door survey, telephone, E-mail, QQ group, alumni association and other ways to send questionnaires to graduates and employers as much as possible.

C. Statistics of the questionnaire.

The returned questionnaires were classified by hand. According to the statistical results, all kinds of problems existing in the professional education and grading system of statistical analysis of the results should be analyzed, and the concerned problems of undergraduates, teachers and the employer should be also analyzed.

D. Discuss curriculum reform plan.

It is aimed at several important subjects in surveying and mapping engineering such as the foundation of surveying and mapping, digital mapping, control measurement, engineering surveying, etc. According to the questionnaire feedback, proposing comprehensive curriculum reform plan, and aim to improve undergraduates' professional level.

E. Establishment of assessment system.

In the theoretical course, the propositional way should be improved and the course examination should be combined with the production practice voiding "rote memorization" type problems. In terms of practice, the methods of "teacher dominance, student support, student self-assessment, student supervision" should be adopted. The content and requirements of the examination should be required by the teacher and the research laboratory. The teacher and the research laboratory should follow the experiment of all time. Meanwhile, according to the undergraduates' self-recommendation and teacher assessment, selecting a number of assistant teachers from the senior surveying and mapping major to coach the practice session and participate in the grading. After the practice session ends, the undergraduates will rate themselves, and judge other undergraduates in the group. The scores of each link are graded, giving the scoring rules to ensure objectivity and operability of the assessment.

F. Establish effective communication mechanism.

The effective communication mechanism should be established among student management department of the school undergraduates, enrollment and employment, basic college, logistics, the Communist Youth League, the undergraduates' Union. The professional quality evaluation archives should be set up from undergraduates entering school. All grades of undergraduates during the school period would be quantified and recorded in the archives. The archives would encourage undergraduates to participate in the activities and especially the professional services. Thus, the phenomenon of "death reading and reading death" could be avoided effectively.

V. CONCLUSION

This paper discussed a system of how to establish the professional quality evaluation under the background of the current high school enrollment, the quality of undergraduate education declining and especially the proportion of practice of Higher Professional (such as Surveying and Mapping Engineering). Through the investigation and the analysis of the existing situation, according to teaching management experience of the participants for many years, the system of a complete, objective, comprehensive evaluation of undergraduates was established which can truly evaluate the professional quality of undergraduates.

The main innovation points of this topic are as follows:

(1) Aiming at the major of practical skills, the evaluation system of professional quality was puts forward which could provide objective evaluation for undergraduates, schools, employers and so on;

(2) By increasing the proportion of experiment, practice and other practical links in the evaluation of performance, the evaluation of professional quality would encourage undergraduates to combine theory with practice;

(3) The undergraduates were introduced as participants in the scoring. The self-assessment and mutual evaluation mechanism were set up.

Therefore, it's no longer a talk of combining theory with practice and enhancing work ability. It also can provide

comprehensive reference basis for employers. Employers can target graduates who meet their qualifications. In the end, the evaluation system can be used as an important basis for scholarship evaluation, awards, excellent title, and an exemption graduate elected.

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