

Investigation and Reflection on Curriculum Setting of Mathematics Education in Local Normal University

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Abstract: Curriculum setting plays an important role in the process of undergraduate students' education in local normal university. Whether the curriculum setting is reasonable or not directly decides the possibility of realizing the educational objectives and completing teaching tasks. In this paper, we conducted a questionnaire survey of school students, graduated and in-service teachers. It aimed to learn about present condition, actual needs and expectations of curriculum setting of mathematics education so as to improve present curriculum design and improve the training quality of students.

Keywords: Mathematics Education, Curriculum Setting, Investigation and Reflection

INTRODUCTION

In the 21st century, with the continuous progress of society and science and technology, there is growing attention in teacher's education in China. The success or failure of the whole educational reforms is dependent on the reforms of the teacher education. And the curriculum reform in the teacher education is one of the main decisive factors of teachers' education reform who are qualified to teach for junior and senior schools. Whether the curriculum design is reasonable or not directly decides the possibility of realizing the educational objectives and completing teaching tasks. Therefore, it is necessary to analyze the needs of undergraduate students' curriculum design so as to meet with the demands of learners and social units [1-5].

The study investigated present condition of curriculum setting of mathematics and applied mathematics major (Mathematics Education) in my university from the perspective of needs analysis. Questionnaires and interviews were used to gather data from graduate students majored in mathematics and applied mathematics major (Mathematics Education) of my university (including students at school and students graduated from this major) and in-service teachers. To learn about the present situation, demand situation and expectation of the course setting in this major, the aim is to improve the present situation of the curriculum and meet the needs of the learners and the social employers.

SURVEY RESULT

In this study, 130 questionnaires were issued to juniors, seniors, graduates and teachers, and 121 valid questionnaires were collected. Among them, 59 students, 27 graduates, 35 math teachers in secondary school. The findings are as follows:

A survey of Specialty Courses

Table-1: Specialty Courses Importance Questionnaire

Course title	Student survey		Graduate survey		In-service teacher survey	
	number	proportion	number	proportion	number	proportion
Mathematical Analysis	55	93.22%	23	85.19%	31	88.57%
Advanced Algebra	48	81.36%	20	74.07%	31	88.57%
Multimedia Courseware	48	81.36%	23	85.19%	30	85.71%
Mathematics Problem Solving in High School	46	77.97%	18	66.67%	29	82.86%
Probability and Mathematical Statistics	44	74.58%	20	74.07%	28	80.00%
Analytic Geometry	43	72.88%	22	81.48%	28	80.00%
Mathematical Software	42	71.19%	21	77.78%	26	74.29%
Complex Function Theory	38	64.41%	9	33.33%	3	8.57%
Ordinary Differential Equations	35	59.32%	11	40.74%	4	11.43%
Course of Mathematical Competition	32	54.24%	15	55.56%	31	88.57%
Mathematical Modeling	32	54.24%	16	59.26%	5	14.29%
Modern Algebra	30	50.85%	6	22.22%	16	45.71%
Pedagogy of Mathematics	28	47.46%	16	59.26%	30	85.71%
History of Mathematics	23	38.98%	11	40.74%	15	42.86%
Real Function Theory	20	33.90%	8	29.63%	11	31.43%
Effective number of respondents	59		27		35	

From the results of the survey, it was agreed that the courses of Mathematical Analysis, Advanced Algebra and Multimedia Courseware were important. Because the content is abstract and difficult to understand, it is generally believed that the Real Function Theory does little help to itself, and therefore considers the course unimportant. On the basis of teaching needs, in-service teachers think that the two courses of Complex Function Theory and Ordinary Differential Equations are of the least importance. Graduates from work need to think that the curriculum of Modern Algebra is the least important. The most surprising of all was that only 47.46% of the students in the school thought the Pedagogy of Mathematics helped them, while 85.71% of the in-service teachers thought this course was important.

A survey of some Public Basic Courses

Table-2: Some Public Compulsory Courses Importance Questionnaire

Course title	Student survey		Graduate survey		In-service teacher survey	
	number	proportion	number	proportion	number	proportion
College English	36	61.02%	18	66.67%	11	31.43%
Educational Psychology	47	79.66%	23	85.19%	29	82.86%
Pedagogy	40	67.80%	21	77.78%	30	85.71%
College Physics	11	18.64%	2	7.41%	11	31.43%
Fundamentals of computer	46	77.97%	19	70.37%	28	80.00%
Programming in C	24	40.68%	11	40.74%	6	17.14%
Physical Education	29	49.15%	7	25.93%	17	48.57%
College Chinese	13	22.03%	5	18.52%	21	60.00%
Effective number of respondents	59		27		35	

In the survey of public compulsory courses, we found that Educational Psychology and Pedagogy were generally considered important, while a College Physics course was considered to be of little use. It is worth noting that College Chinese course is not considered important for school students and graduates, but 60% of in-service teachers consider it important.

REFLECTION AND SUGGESTION

Through the questionnaire data analysis, the course system of teacher education in my university not only pay great attention to professional education courses, but also raise the ratio of general education courses and teachers in vocational courses consciously. However, there are some problems as follows: present curriculum design couldn't meet with needs of learners and social units well, because of emphasizing theoretical knowledge instead of practical ability; lack adequate

understanding to the variation of math curriculum context in the basic education reform; materials selection is not appropriate and the influence that inveteracy of traditional math curriculum setting, and so on.

Adjustment of Curriculum System

According to the findings, we can remove the generally considered unimportant courses, or adjust the nature of the course. For example, we can delete College Physics from the course plan, and change the Real Function Theory into professional elective courses. The courses that are generally considered important should be appropriately increased in teaching hours and practical training, while additional tutoring may be considered to meet the learning needs, such as mathematical analysis, multimedia courseware, etc. In addition, consideration should be given to the establishment of solutions courses which are closely related to middle school teaching.

Select Appropriate Materials and Update Course Content

Materials and the level must be suitable for students. Teachers in the teaching process for students to select the appropriate materials can also be combined with the case of students to supplement and deletion of material for students learning anything to improve teaching effectiveness. For course content, we should pay more attention to the basic theory and basic skills, appropriately increase the number and depth of elective courses, understand the knowledge of the frontier areas of this profession, and use the mathematics discipline advantage to research and promote the teaching reform and improve teaching quality. In addition, according to the students' actual situation, we encourage teachers to prepare their own handouts and change their teaching methods. For example: Pedagogy of Mathematics and College Chinese.

Strengthen Preservice Education

Practice Course is an important way which normal students linking theory with practice and get under the tutelage of the actual ability to teach and to improve the overall quality. It is also a test of Teachers Colleges educational philosophy, and culture of one of the program, teaching content and methods of teaching standards. It is recommended that secondary school mathematics teachers can employ analog classroom teaching of school students training to serve as instructor, and increase in the number of educational practice.

CONCLUSION

Curriculum setting is an important part in the program of cultivating talents. It is crucial for students to gain solid theoretical knowledge and plays a very important role in improving the quality of undergraduate education. By the analysis to the result, we have pointed out the problems in present course setting, and put forward some suggestions to help colleges and universities design graduate courses reasonably, thus to meet the needs of learners and social units better.

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