

# The Implementation Strategy of Process Assessment in Higher Mathematics Curriculum

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**Abstract**—Process assessment is an important teaching measure reform, which is an effective means to improve students' course grades and an important basis for teachers to adjust teaching progress and methods in a timely manner. This article discusses the implementation of classroom performance, chapter tests, and homework assessments in process assessment.

**Index Terms**—Classroom performance, Chapter quizzes, Homework after class.

## I. INTRODUCTION

The introduction of process assessment is an important teaching reform [1-3], and higher mathematics is a very important fundamental theoretical course. Learning higher mathematics well can lay the necessary mathematical foundation for learning subsequent courses. The following discussion takes process assessment in higher mathematics as an example.

Before the reform, the comprehensive grades of higher mathematics courses mainly included two aspects: regular grades and final grades, with regular grades accounting for 20% and final grades accounting for 80%, or regular grades accounting for 30% and final grades accounting for 70%. Usually, the grades do not specify which indicators are included and how much weight each indicator has.

After the teaching reform, process assessment was introduced in higher mathematics, with assessment indicators including classroom performance, homework, chapter tests, mid-term exams, course papers, etc. The comprehensive grade of the course includes a process assessment (regular grade) and a final grade, each accounting for 50%.

## II. IMPLEMENTATION STRATEGY FOR PROCESS ASSESSMENT

The process of process assessment itself also has a gradual improvement process, where different teachers choose different process assessment indicators for different majors and classes. Based on the objectives of the process assessment, discuss the implementation of classroom performance, homework, and chapter tests as follows.

*A. Classroom performance, evaluating students' learning attitudes through classroom notes*

Classroom performance is mainly based on attendance, class attitude, classroom participation, quality of answering questions, and teacher-student interaction to provide grades. Classroom performance accounts for 30% of regular grades.

In the process of teaching higher mathematics, classroom notes can reflect the classroom attitude and participation of each college student, so teachers can choose classroom notes as indicators of classroom performance. The teacher should present the formulas and example questions that need to be recorded to the students and leave enough time. Score based on whether the required notes are written completely and correctly.

The purpose of doing this is to strengthen students' memory and understanding of newly learned knowledge points through writing; The second is to prepare review materials and scope for after-school review and final exam review.

*B. After class assignments to assess students' mastery of the knowledge they have learned*

Assigning homework to assess students' analytical and comprehensive abilities, as well as their ability to apply learned knowledge to solve practical problems, is a routine method. About 30% of the usual grades.

On the basis of classroom teaching content, assign homework questions, give scores based on student analysis and answers, correct representative errors, explain common problems, or adjust teaching progress.

*C. Chapter quizzes, repeated chapter quizzes to gradually improve students' academic performance*

Classroom testing refers to on-site testing in the classroom, but it has its limitations. Firstly, it is limited by class hours, which makes it difficult to implement phased assessments of the course smoothly. Secondly, it was found that some students had unsatisfactory test results and could not achieve the purpose of process assessment. [4] examined the development and refinement of possible mathematical models for the intellectual system of career guidance. Mathematical modeling of knowledge expression in the career guidance system, Combined method of eliminating uncertainties, Chris-Naylor method in the expert information system of career guidance, Shortliff and Buchanan model in the expert information system of career guidance and Dempster-Schafer in the expert information system of career guidance method has been studied. [5] discussed that according to the observations in this paper, an existing mathematical model of banking capital dynamics should be tweaked. First-order ordinary differential equations with a "predator-pray" structure make up the model, and the indicators are competitive. Numerical realisations of the model are required to account for three distinct sets of initial parameter values. It

is demonstrated that a wide range of banking capital dynamics can be produced by altering the starting parameters.

In order to break the limitation of time and space, we use the Internet and the learning platform to add a chapter test link, that is, after each chapter is completed, we release the examination content for the key and difficult problems of the course, and examine the students in a timely manner

The level of mastery of the knowledge learned and the overall learning situation.

(1) When publishing exam content on the Learning Platform, in order to make it easier for students to find a suitable time slot, they use their spare time to do it. They choose to answer questions for 60 minutes and extend the exam time, delaying the deadline, such as completing it within 2 days.

(2) The chapter test paper is composed by the system according to the set assessment content and scope. The order of questions and options received by each student is different. The purpose of this is to enable students to independently complete the chapter test.

(3) Allow retakes, such as 5 times. The retake involves receiving different test papers, which students can repeat. This allows students to promptly identify and fill in any gaps based on the test results, adjust their learning methods, and independently summarize the knowledge points. And through repeated practice, enhance the ability to apply knowledge to solve problems, thereby achieving the purpose of process assessment.

(4) Allow students to check their test papers after the exam, check the correctness of the questions, and check their scores. This way, students can identify their shortcomings in a timely manner and make improvements.

(5) If the score is below 80, it indicates that the student does not have a good grasp of the content of this chapter. If the student has already done it 5 times, it can be called back and asked to do it again. The process of redoing is a further learning process, which is in line with the original intention of process assessment.

Chapter tests are uniformly conducted in the form of multiple-choice questions, which are relatively simple and can greatly reduce the difficulty of learning for students and stimulate their confidence in learning.

### III. RESPONSE MEASURES THAT TEACHERS SHOULD TAKE BASED ON STAGE PERFORMANCE IN PROCESS ASSESSMENT

Process assessment is an effective means to improve students' course grades, and it is also an important basis for teachers to adjust teaching progress and methods in a timely manner.

Teachers should analyze and summarize the distribution of student learning outcomes in a timely manner, and adjust teaching progress, content, difficulty, and methods at any time. Not waiting until the end, just writing a regular grade for the students.

In short, classroom notes can assess students' learning attitudes, homework can test their mastery of the knowledge they have learned, and repeated chapter tests can gradually improve their academic performance. These three assessment indicators can achieve the three goals of process assessment. Process assessment is beneficial for both student learning and teacher teaching, and is an important teaching reform.

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