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Research on the Process Evaluation of the Flipped Classroom -- Taking the Course of "Fundamental Accounting" as an Example

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Abstract

Process evaluation provides an objective and comprehensive assessment of students' learning performance across the pre-class, in-class, and post-class stages of the flipped classroom model. This approach not only enhances students' learning efficiency but also aids teachers in improving their instructional effectiveness. By utilizing the "umooc" platform and implementing process evaluation within the context of the accounting flipped classroom, the benefits of this teaching model can be more effectively harnessed. Consequently, this promotes meaningful learning experiences for students while simultaneously enhancing teachers' proficiency in the accounting instruction.

Keywords

Process-oriented assessment, Flipped classroom, Fundamental accounting.

1. Introduction

The flipped classroom represents a blended learning model that inverts the conventional sequence of knowledge transmission and internalization, reflecting a student-centered pedagogical philosophy. In this framework, knowledge transmission is facilitated through self-directed study with the support of information technology prior to class sessions, while knowledge internalization occurs through teacher guidance and peer collaboration during class time. This approach enhances students' critical thinking and problem-solving skills, fosters the development of self-directed and lifelong learning competencies, and promotes their academic advancement. The effectiveness of a flipped classroom is significantly influenced by the comprehensiveness of pre-class preparations. To ensure sufficient preparation before class, formative assessment plays an essential role.

Although the traditional assessment method for the "Fundamental Accounting" course includes an evaluation of regular performance, the criteria employed are often ambiguous and lack quantifiable standards. Consequently, the assessment outcomes for this course are predominantly determined by students' final exam scores, resulting in a deficiency of process evaluation. This approach is clearly inconsistent with the new hybrid learning model characteristic of flipped classrooms.

Therefore, using the "Fundamental Accounting" course as a case study, this paper explores and examines process evaluation within a bilingual accounting flipped classroom framework based on "umooc". The objective is to enhance classroom efficiency while improving teachers' teaching capabilities and fostering students' autonomous learning skills.

2. The Current Situation of the Course "Fundamental Accounting"

"Fundamental Accounting" is a foundational course in accounting. It presents significant challenges for instruction, as it is offered during the first half of the sophomore year to students who possess no prior knowledge of accounting and often struggle to comprehend and apply its

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principles. Historically, although the instructor transitioned from a traditional teaching model to a flipped classroom approach, the assessment methods remained conventional. In this setting, the teacher primarily focused on delivering content rather than fostering active learning among students. Consequently, there was an absence of process-oriented assessments that could effectively gauge students' understanding and proficiency levels.

Moreover, insufficient communication and information exchange between instructors and students rendered the flipped classroom format largely superficial, undermining its potential to enhance instructional effectiveness.

3. Process Evaluation of Flipped Classroom Based on "umooc"

The construction of a blended teaching model for basic accounting should follow the concept of "student-centeredness", fully utilize information technology, and combine the advantages of online learning and offline teaching. Specifically, it can be constructed from the following aspects:

(1)Construction of online learning platforms: Build a fully functional online learning platform, providing abundant learning resources such as micro-lesson videos, online tests, case analyses, etc., and set up interactive modules like discussion areas and Q&A sections to promote students' autonomous learning.

(2) Offline classroom teaching design: Offline classroom teaching should focus on deepening and expanding knowledge points, and adopt diverse teaching methods such as case analysis, group discussion, and role-playing to guide students to apply theoretical knowledge to practice.

(3)Construction of Teaching Evaluation System: Establish a diversified teaching evaluation system, incorporating online learning participation, offline classroom performance, assignment completion, and final exams into the assessment scope to comprehensively evaluate students' learning outcomes.

Accordingly, during this semester, the author conducted a process evaluation of the instruction for "Fundamental Accounting" across these three stages—namely, pre-class process evaluation, in-class process evaluation, and post-class process evaluation.

3.1. Pre-class Process Evaluation of Flipped Classroom Based on "umooc"

In the blended teaching of basic accounting, the pre-class stage is an important period for students to study independently and acquire knowledge, and it is also the basis for teachers to understand the students' learning situation and design teaching plans. "Fundamental Accounting" is a course that necessitates substantial preparatory work from students prior to class. A scientific and reasonable pre-class stage design can effectively stimulate students' interest in learning and improve the efficiency of classroom learning. How can we assess whether students have completed their preview assignments? We make several pre-class learning tasks for Students which are shown as below:

(1)Watch micro-lesson videos: Teachers create or select high-quality micro-lesson videos based on teaching objectives and content to guide students in learning new knowledge. These videos should be concise and to the point, highlighting key points, and come with corresponding reflection questions or practice exercises.

(2)Complete the online test: After watching the micro-lesson videos, students need to complete the corresponding online test to check their mastery of the knowledge points. The online test questions should be of moderate difficulty and be able to provide timely feedback on the test results.

(3)Participate in online discussions: Teachers can set up discussion areas on online learning platforms, guiding students to discuss and exchange around the learning content, share learning experiences, and raise difficult questions.

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(4)Preview the textbook content: Students are required to preview the textbook content in advance, understand the basic concepts and principles, and mark out the difficult problems so as to conduct targeted learning in class.

The “umooc” platform has facilitated the implementation of pre-class evaluations. Prior to class, instructors can post announcements on this platform. For instance, in a lesson focusing on the accrual basis and cash basis of accounting, the pre-class announcement issued by the instructor includes the following components: (1) Watch the case video and participate in voting regarding the timing of revenue recognition. (2) Complete the preview of course materials available on the platform.(3) Initiate a discussion in the designated area concerning revenue recognition as presented in the video. (4) Prepare and upload a pre-class report to the “umooc” teaching platform.

Teachers assess students' previewing activities through the “umooc” platform. The platform's preview management function allows teachers to access relevant data, enabling them to determine whether students have completed their courseware previews. For those who have not finished their previews, teachers can encourage completion via the private messaging feature. The platform categorizes student preview statuses into three distinct situations: completed preview, partially completed preview, and not yet previewed. Correspondingly, scores are assigned as follows: 100 points for a completed preview, 70 points for a partially completed one, and 40 points for no preview.

Furthermore, Participation in online discussions is also a key indicator of students' engagement and comprehension. Active participation shows that students are thinking critically about the material and interacting with their peers. Teachers can observe which students are contributing regularly and which ones may need encouragement. The topic area function of the “umooc” platform facilitates pre-class discussions between teachers and students on specific subjects. Prior to class sessions, instructors can initiate new discussion topics. An example of such a topic initiated for this course is “The Timing and Reasons Behind Income Realization in a Mooncake Shop.”Throughout this process, the teacher can provide feedback by liking posts to motivate students to participate actively in discussions related to the topic. Ultimately, students upload their preview reports within the discussion area dedicated to these topics, promoting resource sharing among peers. By collecting and analyzing this data, teachers can better understand the strengths and weaknesses of their students. This information serves as a solid foundation for planning and delivering more effective classroom teaching. It enables teachers to create a more personalized learning environment, where each student's needs are addressed, and their progress is supported. Ultimately, this approach helps to enhance the overall learning experience and outcomes for all students.

To present the process evaluation data of the blended teaching of basic accounting more intuitively and conduct analysis, we design the following table:

Table 1. Evaluation Form for Students' Online Learning Participation（part）

Name	Study Duration (hours)	Study Progress (%)	Number of Posts (pieces)	Online Learning Participation (score)
张*	10.5	92	6	9
赵*	8.2	84	3	7
王*	12.1	95	7	10
丁*	7.8	80	4	6
…	…	…	…	…

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Based on the study duration and progress, the majority of students are able to finish their online learning tasks within the expected timeframe. However, a small number of students exhibit slower progress and would benefit from closer monitoring and support.In terms of the volume of contributions, students demonstrate significant engagement in online discussions. Nevertheless, the quality of responses from certain students requires enhancement, indicating a need for additional guidance.In summary, while student participation in online learning activities is generally high, there remains potential for further improvement.

3.2. In-class Process Evaluation of Flipped Classroom Based on "umooc"

The interactive features of "umooc" have significantly enhanced the interaction between teachers and students, both inside and outside the classroom. Teachers can sort and analyze comments within the interactive courseware to extract valuable information that aids in preparing for classroom instruction. Furthermore, educators are able to utilize the interactive editing function in the courseware to incorporate various question types, such as true or false questions, into key points presented in PowerPoint slides. During class sessions, the platform automatically grades student responses, swiftly generates interactive results, and displays these outcomes as part of formative assessment.

In addition, during interactive sessions, teachers can randomly select students to articulate their understanding of the differences between accrual basis accounting and cash basis accounting. Based on their responses, students may receive star rewards. Other classmates are encouraged to provide supplementary insights throughout this process.They also may earn star rewards from teachers for their contributions. Each student's performance during classroom questioning is recorded within "umooc", contributing to a comprehensive formative assessment.

The discussion board not only captures students' learning behaviors prior to class but also collects data generated during instructional time. In a lesson focused on accrual basis versus cash basis accounting, each group was tasked with uploading a completed simple income statement. Through evaluations conducted by both instructors and peers, there has been an observable improvement in students' mastery of essential knowledge points. Additionally, feedback from both teachers and peers is documented within the system as part of ongoing process evaluation.

To present the process evaluation data of the blended teaching of basic accounting more intuitively and conduct analysis, we design the following table:

Table 2. Assessment Form for Students' Offline Classroom Performance

Name	Class Engagement (Score)	Learning Attitude (Score)	Practical Ability (Score)	Offline Class Performance (Score)
张*	9	8	7	8
赵*	8	9	8	8.5
王*	10	9	9	9.5
丁*	7	8	7	7
...	...	...	...	...

From the perspective of classroom engagement and learning attitude, most students can actively engage in classroom learning and have a correct learning attitude. In terms of practical ability, the ability of some students to apply theoretical knowledge to practice still needs to be improved, and the training of practical links should be strengthened. Overall, students perform well in offline classes, but their practical abilities still need to be strengthened.

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3.3. Process Evaluation of Flipped Classroom after Class Based on "umooc"

To enhance the effectiveness of classroom instruction, teachers will assign various tasks to be completed outside of class. For instance, in a lesson focused on accrual and cash basis accounting, the teacher has outlined the following after-class assignments: (1) Watch the instructional micro-video.(2) Complete the test questions available in "umooc". These test questions consist of a mix of multiple-choice and true/false items, totaling approximately 10 questions with a time limit of 5 minutes. (3) Submit personal homework in the assignment area, where students are required to select an appropriate accounting basis to determine Company A's revenue and expenses for this month based on 10 economic transactions and prepare a simple income statement for that period. Upon completion, students must upload their work to the "umooc" platform.(4) Participate in a questionnaire survey related to this class.

The evaluation of these tasks can be efficiently managed through "umooc", significantly alleviating teachers' workloads. For objective questions, educators can rely entirely on the platform for grading while swiftly gathering students' learning data. In terms of case assignments, teachers also utilize the platform for assessment. Based on each student's submissions, instructors provide scores within the system and offer comments as necessary. Students have opportunities to make corrections informed by timely feedback from their teachers, thereby addressing any gaps in understanding. Furthermore, teachers post questionnaires on the platform that allow students to earn corresponding scores upon completion. This approach facilitates collecting feedback from most students regarding their experiences in class and enables educators to make suitable adjustments to teaching design accordingly. All collected data is automatically recorded within the platform as part of ongoing process evaluation.

To present the process evaluation data of the blended teaching of basic accounting more intuitively and conduct analysis, we design the following table:

Table 3. Evaluation Form for Students' Homework Completion Situation

Name	Homework quality (score)	Timeliness of homework submission (score)	Homework reflection (score)	Completion of homework (score)
张*	8	9	7	8
赵*	9	8	8	8.5
王*	10	10	9	9.5
丁*	7	8	6	7.5
...	...	...	...	...

In terms of the quality of homework and the timeliness of submission, the majority of students can complete their assignments meticulously and submit them punctually.In terms of the reflection on homework, it is observable that some students are deficient in reflecting on and summarizing their homework, and thus more guidance is necessary.Overall, students' completion of homework is satisfactory; however, their consciousness of reflecting on homework awaits enhancement.

4. Summary

Formative assessment is integrated throughout the pre-class, in-class, and post-class stages of the flipped classroom model, thereby enhancing its overall effectiveness. This approach creates

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a mutually beneficial situation for both teachers and students. For students, formative assessment offers timely feedback regarding their knowledge acquisition, fosters their initiative and enthusiasm for learning, and supports the development of autonomous learning skills as well as lifelong learning habits. For teachers, it allows them to adjust their teaching pace according to students' mastery of content, which contributes positively to their professional growth.

Moreover, student feedback on classroom instruction serves not only as an integral component of formative assessment but also as a crucial reference point for teachers' reflective practices. The primary aim of formative assessment is to facilitate mutual progress among both educators and learners through various evaluative methods. While the author has investigated this evaluative approach extensively, there remain numerous deficiencies that necessitate ongoing practice and refinement in order to genuinely embody a student-centered teaching philosophy.

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