

# Exploring the Blended Learning Model in the Course of Data Collection and Processing

Yang Shanshan\*

\*School of Electronic Information, Zhejiang Business Technology Institute, Ningbo, Zhejiang, China

Email:1966542120@qq.com

\*\*\*\*\*

## Abstract:

Addressing issues in traditional teaching, such as limited teaching resources, insufficient depth of content, low student motivation, poor autonomous learning ability, and delayed feedback on teaching outcomes, this paper proposes a blended learning model for the Data Collection and Processing course. The online component provides PPTs, teaching videos, and surveys, while the in-class sessions focus on explaining key and difficult points, group discussions, and practical exercises. After class, tests are designed, and evaluations of the teaching content are conducted.

*Keywords* — **blended learning; data collection and processing; teaching model.**

\*\*\*\*\*

## I. INTRODUCTION

With the vigorous economic development and the increasing maturity of internet technology, information technology is being widely applied in education, and the teaching model in institutions of higher learning is gradually transitioning towards a blended learning model that combines online and offline teaching. Based on the exploration of learners' autonomous learning and the space for constructing knowledge, Jonassen believes that blended learning can highlight the subjectivity of learners[1]. In the context of globalization and the knowledge economy, researchers Hirschman & Wood point out [1] that learners need to master far more than just knowledge and skills; digital technology, digital communication skills, and flexible methods of knowledge acquisition are all essential abilities for "21st-century learners." [2]. Among them, the MOOC platform, which cleverly combines the advantages of online and offline teaching, not only greatly enriches online resources and broadens educational resources and platforms but also effectively compensates for the limitations of traditional offline teaching in form and content. Therefore, it is necessary to explore the application

of the blended learning model in the Data Collection and Processing course.

Data Collection and Processing is an important course for majors such as computer science, software engineering, and data science. It aims to equip students with basic methods and techniques for data collection and processing, laying a solid foundation for advanced courses such as data analysis and data mining.

## II. PROBLEMS WITH TRADITIONAL TEACHING OF DATA COLLECTION AND PROCESSING

### A. *Limited teaching resources and insufficient depth of content*

Under limited resource conditions, it is difficult to comprehensively cover the essence and frontier knowledge of the course, which undoubtedly restricts the breadth and depth of students' knowledge acquisition. Traditional teaching mostly confines knowledge to textbooks, making it difficult to meet students' growing knowledge demands and exploratory enthusiasm, thereby affecting the construction of their knowledge system and the cultivation of critical thinking skills.

***B. Low student motivation and poor autonomous learning ability***

The traditional teaching model has long dominated, making it difficult for students to shift from passive learning in the short term, maintaining the exam-oriented mindset under the traditional teaching model. Students lack strong autonomy in learning and generally have low learning motivation. This phenomenon not only affects their knowledge absorption and deepening but also limits the full exploration of their personal potential and overall improvement of their comprehensive qualities. Students often overly rely on direct instruction from teachers during the learning process, lacking the motivation and methods to actively explore knowledge, resulting in poor learning outcomes.

***C. Delayed feedback on teaching outcomes***

In teaching practice, we often encounter the problem of delayed feedback on teaching outcomes, which becomes a stumbling block for improving teaching quality and efficiency. Without an immediate feedback mechanism, it is difficult for both teachers and students to accurately assess teaching effectiveness and learning progress, leading to delays in adjusting teaching and optimizing learning strategies. For teachers, it is challenging to accurately locate teaching difficulties and blind spots. Students, on the other hand, may feel confused or demotivated due to the lack of immediate confirmation of their learning outcomes.

**III. DESIGN OF COURSE TEACHING SEGMENTS**

Taking the first lesson on basic concepts and methods of data collection in the Data Collection and Processing course as an example, this section elaborates on the teaching design and practice of the blended learning model. The overall approach is to progress from shallow to deep, combining theory with practice. First, various concepts are explained, followed by the use of Python programming to collect data and the instruction on using the Octopus collector for data collection.

***D. Online Pre-class Learning***

Teachers require students to preview before class, utilizing the Superstar Learning platform. Teachers release the PPT, teaching videos, learning materials,

and specific case explanation videos for the lesson before class. In this pre-class learning, students learn with clear objectives, which can improve their autonomous learning ability and enhance their enthusiasm for participating in classroom discussions. The teaching videos allow students to watch the videos repeatedly and pause them for practice without teacher guidance.

In the lesson on basic concepts and methods of data collection, there are numerous concepts, so auxiliary materials can be prepared online to help students understand. Before class, students need to grasp the concepts of data types, data collection methods, and data storage methods. Teachers should prepare a specific collection example and record it as a video for students to watch repeatedly, providing a basis for them to understand and apply similar concepts. At the same time, surveys are set up to collate the knowledge points that students do not understand.

***E. Offline Teaching Activities***

Firstly, there is classroom instruction, where the teacher explains the key and difficult points of the course in detail, focusing on the questions raised by the students, based on the online resources and survey results. Then, through group discussions and group collaboration, students complete the collection tasks for specific cases.

In this course, students should master how to use Python scripts and the Octopus collector for data collection. They need to analyze the collected data first, learn to use the browser's developer tools to analyze packets, parse HTML elements, engage in group discussions, and submit the collected data individually.

***F. After-class Review***

Tests and discussion areas are set up on the Superstar Learning platform to facilitate timely assessment of students' learning outcomes. For example, if students are asked to collect product listings from JD.com in class, they are assigned to collect data from product detail pages after class and save it as an Excel file for uploading.

#### **IV. ESTABLISHING A DIVERSIFIED ASSESSMENT AND EVALUATION MECHANISM**

Teaching evaluation is an indispensable part of the educational process, directly related to students' learning outcomes and teaching results. Through teaching evaluation, we can timely understand students' learning situations and teachers' teaching achievements, providing a basis for improving future teaching. Assessing students' learning not only guides their learning direction and clarifies their learning goals but also motivates them to enhance their self-confidence and self-esteem.

The classroom assessment includes the following components: final exam (offline), course quizzes (online + offline), completion of online learning tasks (online), and assignments (online + offline). Among them, the final exam accounts for 40%, online learning tasks and quizzes account for 20%,

and offline quizzes, classroom performance, and assignments account for 40%.

#### **V. CONCLUSIONS**

The "student-centered" blended learning model must be based on students' learning situations, and there is no single best teaching method that adapts to all teaching ecologies [3]. This paper analyzes the shortcomings of the traditional education model and, taking the Data Collection and Processing course as an example, designs course cases to stimulate students' autonomous learning ability.

#### **REFERENCES**

- [1] Jonassen, D.H. Instructional design theories and models [J]. *A New Paradigm of Instructional Theory*, 1999(2):215-240.
- [2] Hirschman, K. & Wood, B. 21st century learners: Changing conceptions of knowledge, learning and the child [J]. *The New Zealand Annual Review of Education*, 2018(23):20-35.
- [3] Prabhu, N.S. There is no best method—Why? [J]. *TESOL Quarterly*, 1990(2):161-176.