# Innovation and Practice of Higher Education Entrepreneurship Education Models in the Context of Web Technology

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**Abstract.** With the continuous expansion of higher education and its accessibility, the traditional teaching model in universities, primarily focused on knowledge transfer, has become increasingly inadequate to meet the demands of societal development. How to establish a new educational model that can stimulate students' entrepreneurial spirit and capabilities is a pressing issue in higher education reform. This study addresses the shortcomings of the traditional teaching model and proposes an innovative entrepreneurship education model based on web technology. This model integrates three key elements: online courses, project-based training, and faculty development, creating a new teaching ecosystem that encourages active student engagement. The research conducted practical experiments in two universities, utilizing quantitative research methods such as surveys and performance comparisons. The results demonstrate that the new model significantly improves learning outcomes and student satisfaction. This research provides a feasible technological approach and empirical support for current higher education teaching reforms.

**Keywords:** Higher education, Teaching model, Web technology

## 1 Introduction

In the context of the increasing democratization of higher education, inspiring students' entrepreneurial spirit and capabilities has become a challenging issue for universities. While previous research has explored the potential of smart campuses and big data analytics, less attention has been given to reforming teaching models. Therefore, this study designs an innovative entrepreneurship education model based on web technology. This model, comprising online courses, project-based training, and faculty development, innovates teaching content, formats, and approaches to stimulate student proactivity. The online courses offer a rich array of videos, documents, and other online learning resources; project-based training fosters teamwork through scenario simulations, and faculty development enhances teachers' use of new concepts and tools. The research conducted experiments in two universities, validating the effectiveness of the new model in improving learning outcomes and satisfaction through quantitative analysis [1].

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## 2 Analysis of Issues in Traditional Teaching Models

### 2.1 Overview of Traditional Teaching Models

For a long time, Chinese universities have primarily employed traditional teaching models with a focus on face-to-face instruction. Specifically, this model centers on teachers, with instructors taking a dominant role in the classroom, while students occupy a relatively passive position for knowledge reception. In the teaching process, teachers mainly explain knowledge points through lectures and chalkboard presentations, and students receive and memorize knowledge by taking notes. This model excessively emphasizes knowledge transmission and student memorization, while paying less attention to students' active roles and the development of their thinking abilities [2].

### 2.2 Main Issues in the Traditional Model

Long-term observation of teaching practices reveals several significant problems with the traditional teaching model: Firstly, there is a severe lack of communication and interaction in the classroom, resulting in a monotonous atmosphere. Secondly, the knowledge imparted is relatively narrow, with limited learning resources available to students. Thirdly, the learning format is relatively one-dimensional, leading to a disconnect between theory and practice, and a lack of practical application in the curriculum. Finally, the assessment methods are relatively simplistic, unable to comprehensively and objectively evaluate students' overall abilities [3].

### 2.3 Analysis of the Root Causes of Problems

Further analysis reveals that the fundamental reasons for these problems lie in the traditional model's excessive emphasis on the teacher's dominant role in the classroom, neglecting students' active engagement and turning the learning process into a passive knowledge acquisition process. Additionally, limited access to diverse knowledge resources is due to constraints in the classroom and learning materials. The disconnect between theory and practice, the lack of a closed-loop learning process, also contributes to these problems. Finally, the oversimplified assessment methods, which focus on outcomes rather than the learning process, result in an inaccurate assessment of students' overall learning experiences [4].As shown in Table 1.

**Table 1** Problems and analysis of the model

| Problem description | Cause analysis |
|---|---|
| Lack of communication and interaction, the classroom atmosphere is monotonous | Too much emphasis on teacher-led, ignoring students' subjectivity, learning becomes a passive acceptance process |
| Narrow range of knowledge, limited learning resources | Classrooms and learning resources are limited, and students do not have access to a wider range of knowledge |
| The form of learning is simple and the application practice is lacking | Theory is separated from practice, the learning process does not form a closed loop, resulting in a single form of learning |

| Problem description | Cause analysis |
| --- | --- |
| The evaluation method is simple and can not judge the students' ability objectively and comprehensively | Evaluation focuses on the result rather than the process, which can not reflect the whole picture of learning, leading to the simplification of evaluation methods |

## 3 Design of a New Teaching Model Based on Web Technology

### 3.1 Design of the Online Course Module

Establish an online course platform, including subsystems such as video-on-demand systems, document management systems, and an online question bank. Construct a course resource database that incorporates high-quality course content, including videos, PPTs, documents, and other formats. Develop an adaptive learning system that designs personalized learning paths based on students' levels and interests. Create a multi-user collaborative online communication platform that supports community discussions, knowledge Q&A, and real-time interaction. Research and develop an intelligent assessment system that enables automatic question generation, facial recognition, and cheating detection, among other functions [5].

```
class OnlineCourse:
        def __init__(self):
        self.course_list = []
        self.interaction = InteractionPlatform()
        self.assessment = AssessmentSystem()
        def add_course(self, course):
        self.course_list.append(course)
            def play_course(self, course):
        print("Playing Course: {}".format(course))
        self.interaction.discuss()
        self.assessment.evaluate()
```

### 3.2 Design of the Project-Based Training Module

Establish a virtual simulation platform to simulate various entrepreneurial scenarios and task requirements. Design a case library with varying levels of difficulty, covering topics such as business plans and marketing. Organize group-based scenario simulation competitions to evaluate the creativity and feasibility of innovative proposals. Foster teamwork and clarify roles and responsibilities to enhance project efficiency. Emphasize the development of students' practical hands-on skills by simulating the entire entrepreneurial process [6].

```
class ProjectPractice:
    def __init__(self):
        self.case_list = []
        self.team_list = []
            def add_case(self, case):
        self.case_list.append(case)
            def assign_team(self, team):
        self.team_list.append(team)
            def run_practice(self, case, team):
        print("Team {} Working on Case: {}".format(team, case))
```

### 3.3 Design of the Faculty Development Module

Establish a dedicated teacher training department equipped with a professional team of trainers. Regularly conduct training on online teaching methods, advocating for new approaches like flipped classrooms and blended learning. Offer training on virtual simulation course design to enhance the ability to create realistic case studies. Provide training on the use of emerging technology tools, such as online interactivity and intelligent assessment. Encourage the organization of teaching workshops to promote the continuous evolution of teaching philosophies and methods [7].

```
class TeacherTraining:
    def __init__(self, teacher_list):
        self.teacher_list = teacher_list
        self.seminar = SeminarEvent()
            def train(self, teacher):
        print("Training Teacher: {}".format(teacher))
        self.seminar.hold()
```

## 4 Practical Implementation and Effects of the New Teaching Model

### 4.1 Establishment of Experimental Environment

This research selected two universities, A and B, as pilot institutions and established experimental teaching classes in their respective schools of management and computer science. In terms of hardware facilities, each university provided 100 laptops and 20 servers, with a network bandwidth of 50Mbps to meet the experimental requirements. Regarding software resources, the research team developed a total of 120 online video courses suitable for management and computer science students as online learning resources. Additionally, six

virtual simulation project-based training schemes were designed specifically for entrepreneurial themes, covering scenarios such as business planning and marketing. In terms of the teaching staff, 20 teachers were selected from both universities and underwent a one-month training program on teaching methods, with a focus on flipped classrooms and case-based teaching skills [8].As shown in Fig 1.


**Figure 1:** Satisfaction Survey Results

### 4.2 Practical Process

During the practical implementation, students were required to independently study the online courses for 60 hours, with teachers providing guidance on key modules. The project-based training component was organized into teams of four students each, with students assuming different roles to complete tasks such as writing business plans, conducting market research, and financial forecasting and budgeting for entrepreneurial projects. Simultaneously, the participating teachers utilized new teaching models such as flipped classrooms and case-based teaching methods during their classes [9].

### 4.3 Experimental Data and Results Analysis

Quantitative research methods, including surveys and tests, were employed for data analysis. A total of 200 questionnaires were distributed, with a response rate of 95%. The satisfaction statistics from the questionnaires were as follows:

Satisfaction with online courses (S) = 85%；Satisfaction with project-based training (P) = 81%；Satisfaction with teacher training (T) = 92%

Significant Improvement in Learning Outcomes: Experimental Group vs. Control Group, Comparing Mean Scores:

Experimental Group: μ1=82.6; Control Group: μ2=75.8

Conducted a two-sample t-test:

$$t = \frac{\mu 1 - \mu 2}{\sigma} \quad (1)$$

Calculating the t-statistic as 3.24 and referencing the critical t-value at a significance level of 0.05, t0.05(50) = 2.009.

Since the calculated t-statistic (3.24) is greater than the critical t-value (2.009), we reject the null hypothesis, indicating that the improvement in the experimental group's scores is statistically significant. In conclusion, the quantitative results demonstrate that the new teaching model effectively enhances learning outcomes, making this experiment a success. [10]

## 5 Conclusion

This study addressed the issues associated with the traditional teaching model, such as monotonous classroom atmospheres and limited knowledge coverage, by designing a new teaching model based on web technology. This innovative model, comprised of three key components: online courses, project-based training, and faculty development, facilitated the innovation of teaching content, formats, and methods. The research was conducted in two universities, and quantitative research methods, including surveys and performance comparisons, were employed.The results demonstrated a significant improvement in the learning environment, knowledge acquisition, and practical application, indicating the new model effectively stimulated student proactivity and achieved the expected outcomes in teaching reform. This research provides a viable technological path and empirical evidence for the reform of traditional teaching models in contemporary higher education.

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