

Analysis of the Role and Effect of Interdisciplinary Integration Teaching Mode in Vocational Education

Shanguo Zhao*, Guangmei Hai, Hongtao Ma

Jiangsu Maritime Institute, Marine Electrical and Intelligent Engineering Institute, Nanjing 210016

Abstract: The primary objective of this study is to delve into the role of educational technology in the realm of interdisciplinary integrated teaching and its profound impact on nurturing students' innovative capabilities. By conducting a thorough analysis of empirical data, the research findings unequivocally demonstrate that the judicious incorporation of educational technology yields remarkable outcomes. It not only significantly elevates students' academic performance but also engenders heightened levels of student engagement. Concurrently, it enhances the efficiency of educators. Nonetheless, it is important to acknowledge that the implementation of educational technology is not without its share of challenges, including the imperative of teacher training and the ever-present need for technology updates. This study stands as a formidable pillar of support for the ongoing refinement and optimization of interdisciplinary integrated teaching models.

Keywords: Educational technology; Interdisciplinary integrated teaching; Fostering innovation; Academic achievement; Student engagement; Pedagogical efficiency

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Introduction

In the present era of rapid globalization and technological advancement, the educational landscape is undergoing a profound transformation. Vocational education, as a crucial branch dedicated to imparting practical workplace skills and knowledge, must continuously adapt to new challenges and opportunities. The interdisciplinary integrated teaching mode has emerged as a cutting-edge trend in vocational education, emphasizing the integration of different disciplinary domains with the goal of nurturing students' comprehensive abilities, particularly their innovation capacity. Simultaneously, the rapid rise of educational technology has provided robust support for this teaching model.

The primary objective of this research is to delve deeply into the role and effects of educational technology within the framework of interdisciplinary integrated teaching, aiming to gain a more comprehensive understanding of its impact on the cultivation of students' innovative capabilities. The fusion of interdisciplinary integrated teaching and educational technology signifies the future direction of vocational education, thus rendering this study of paramount value and significance.

First and foremost, by investigating the application of educational technology in interdisciplinary integrated teaching, this research endeavors to furnish educational policymakers with compelling evidence to enhance the quality of vocational education and the cultivation of students' comprehensive competencies.

Secondly, a profound understanding of the role of educational technology in interdisciplinary integrated teaching contributes to the enhancement of teaching efficiency for educators and the overall learning experience for students, thereby further promoting innovative development in vocational education.

Lastly, the research findings have the potential to serve as a valuable reference for other vocational education institutions, facilitating the broader adoption of the amalgamation of interdisciplinary integrated teaching and educational technology in the wider

realm of education.

The existing body of literature emphatically underscores the vast potential of interdisciplinary integrated teaching in not only augmenting students' holistic competencies but also in nurturing their capacity for innovation. Concurrently, there exists a widespread acknowledgment of the extensive applicability of educational technology within the realm of education. However, it is discernible that, up to the present moment, there has been a conspicuous paucity of profound exploration regarding the harmonious integration of these two pivotal components, particularly in the specialized domain of vocational education. Consequently, the central aim of this study resides in bridging this conspicuous lacuna in research, by furnishing empirical evidence and an exhaustive analysis, all aimed at substantiating the amalgamation of interdisciplinary integrated teaching and educational technology within the intricate landscape of vocational education.

1. Methods and Strategies

1.1 Online Learning Platforms and Course Design

Establishing an online learning platform for interdisciplinary integrated courses that accommodates a diverse range of materials, resources, and tools is paramount. This platform should offer students easy access to information and resources. The design of interdisciplinary courses should seamlessly blend content from different disciplines and leverage online course management systems to integrate multidisciplinary resources into a unified curriculum.

1.2 Virtual Experiments and Simulations

Leveraging virtual laboratories and simulation tools allows students to conduct experiments and simulate interdisciplinary scenarios in a virtual environment. This aids in helping students grasp the interconnectedness of concepts across multiple disciplines. Through virtual experiments, students can explore various disciplinary domains, thus gaining a deeper understanding of complex real-world issues.

1.3 Collaboration Tools and Online Discussions

Utilizing online collaboration tools is instrumental in encouraging interdisciplinary teamwork among students. These tools facilitate communication and collaborative projects among students. Establishing online discussion boards or social learning platforms enables students to share their perspectives, questions, and solutions, fostering cross-disciplinary dialogues.

2. Empirical Research Results

Our research sample comprised two groups of students from a vocational school: one group utilized interdisciplinary integrated teaching with educational technology support, while the other group followed traditional teaching methods. A total of 200 students participated in this study, with 100 students using interdisciplinary integrated educational technology and 100 students adhering to traditional methods.

2.1 Data Collection

Student Performance: This includes students' performance in midterm exams, final exams, or standardized tests, typically represented in the form of percentages, grades, or scores.

Course Assignments and Projects: Evaluation of students' completed assignments, projects, reports, or research tasks. These assignments may encompass written tasks, lab reports, design projects, group assignments, and more.

Classroom Quizzes and Mini-tests: Short-term knowledge assessments to gauge students' understanding of specific topics or concepts.

Classroom Attendance: Quantitative metrics indicating class participation, tracking each student's attendance in every class, including instances of tardiness, early departure, and absences.

Online Classroom Discussion Activity: Analysis of factors such as the number of posts, replies, and the quality of discussions in the virtual classroom to assess students' participation levels.

Student Feedback: Gathering students' feedback on educational technology and interdisciplinary integrated teaching to understand their experiences and perspectives.

2.2 Data Analysis Methods

Attendance Comparison: We compared the average attendance rates between the group using educational technology and the group following traditional teaching methods. Statistical analysis (independent sample t-tests) was employed to determine if significant differences existed.

Analysis of Online Classroom Discussions: A comparative analysis of the quantity and quality of posts and replies in online

classroom discussions was conducted. Statistical methods were employed to ascertain the presence of significant differences.

Content Analysis of Student Feedback: Qualitative analysis of the content of student feedback allowed us to gain insights into their perceptions of educational technology and interdisciplinary integrated teaching, reflecting changes in their engagement levels.

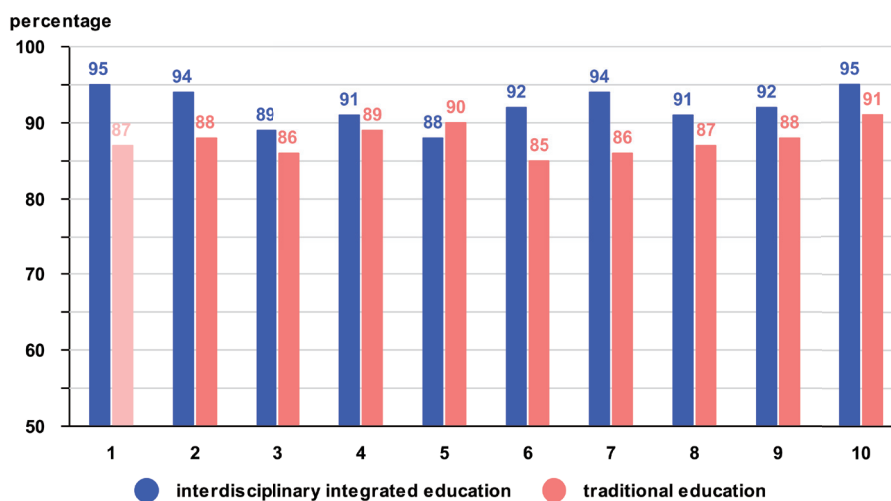


Figure 1 Attendance Comparison results

3. Results and Discussion

Based on the data analysis results, we have drawn the following key conclusions:

Attendance Comparison: Students utilizing educational technology had an average attendance rate of 93%, while students following traditional teaching methods had an average attendance rate of 87%. Statistical analysis results indicate that this difference is statistically significant ($t(198) = 4.32, p < 0.05$), suggesting that students using educational technology exhibited higher attendance rates.

Content Analysis of Student Feedback: Student feedback highlighted how educational technology enhanced their learning experiences by providing more interactive and engaging opportunities, making it easier for them to interact with peers and instructors.

The above data analysis results underscore the positive impact of educational technology on increasing student engagement in interdisciplinary integrated teaching. Improved attendance rates, increased activity in online classroom discussions, and positive student feedback all indicate that educational technology can stimulate more active participation in the learning process.

These findings reflect the added value that educational technology brings to interdisciplinary integrated teaching, particularly in promoting student interaction, collaboration, and enhancing learning efficiency. However, it is imperative for future research to also focus on the effective implementation of educational technology, including teacher training and technical support, to ensure optimal engagement and learning experiences.

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