Curriculum and Teaching Methodology (2025)
Clausius Scientific Press, Canada

DOI: 10.23977/curtm.2025.080413
ISSN 2616-2261 Vol. 8 Num. 4

Problems and Optimization Paths in the Construction of Experimental Teaching System for Integrated Media in Colleges and Universities

Huang Xin

Jungwon University, Goesan-Gun, Chungcheongbuk-Do, Korea

Keywords: Integrated Media; Experimental Teaching System; Technical Support; Teaching Staff; Curriculum Design; Educational Innovation

Abstract: With the continuous advancement of information technology and the increasing diversity of educational demands, the experimental teaching system of integrated media in colleges and universities has gradually become the core of modern educational innovation. This paper analyzes the current situation and challenges of the experimental teaching system of integrated media in colleges and universities, explores the optimization paths in aspects such as technology, teaching staff and curriculum design, and proposes specific improvement strategies in combination with educational technology and constructivist learning theory. The article particularly emphasizes the improvement of technical support and infrastructure, the construction and development of the teaching staff, as well as the innovation of course content, aiming to provide theoretical basis and practical guidance for the sustainable development of integrated media teaching in colleges and universities. By exploring the combination of theory and practice, this paper provides constructive suggestions for educational reformers and promotes the deep-seated transformation of the teaching mode in colleges and universities.

1. Introduction

In recent years, with the rapid development of information technology and the acceleration of the globalization process, higher education is facing unprecedented challenges and opportunities. Especially in the continuous update of teaching methods, learning models and educational contents, the integrated media technology, as a brand-new educational tool integrating multiple communication means, has gradually attracted widespread attention in the education field. The experimental teaching system of integrated media in colleges and universities, as the product of the integration of traditional teaching models and modern technological means, has achieved remarkable results in multiple disciplinary fields. However, in the process of promotion and application, problems such as technical mismatch, weak teaching staff and lagging curriculum design have also been exposed. These problems have restricted the all-round development of the experimental teaching of integrated media. Based on this, this paper aims to explore the optimization path of the experimental teaching system of integrated media in colleges and universities from multiple perspectives, and on this basis, propose practical and feasible

improvement strategies to provide theoretical support and practical guidance for promoting educational innovation in colleges and universities.

2. Analysis of the Current Situation of the Experimental Teaching System of Media Convergence in Colleges and Universities

2.1. The current popularization and implementation of the experimental teaching of integrated media in colleges and universities

With the rapid development of information technology and the advancement of the modernization process of education, the application of integrated media in higher education has gradually become an important trend. Especially in the field of experimental teaching, the introduction of converged media technology not only changes the traditional teaching mode, but also provides new opportunities for the innovation and improvement of experimental teaching[1]. The popularization of the experimental teaching of integrated media in colleges and universities is first reflected in its breakthroughs in teaching content, form and resource integration. Many colleges and universities have successively launched courses related to new media convergence and actively promoted the multimedia integration of classrooms and laboratories. Through the combination of online and offline methods, the transmission of teaching content has become more vivid and diversified. However, although the application of converged media technology in education has achieved initial success, there are still regional differences in the overall popularity. Especially the shortcomings of small and medium-sized colleges and universities in terms of technical equipment, teaching staff and capital investment have led to uneven implementation effects of their converged media experimental teaching[2].

The implementation of the integrated media experimental teaching not only relies on the support of technology, but also involves the transformation of teachers' teaching concepts and abilities. When promoting multimedia teaching in some universities, teachers often encounter problems such as unsuitable teaching methods and unfamiliarity with the application of technology, which leads to the failure to fully exert the teaching effect. In terms of the design of course content, although the integrated media provides more abundant means of expression and diverse teaching models, the content setting of the integrated media experimental courses in some universities is still relatively traditional and fails to fully integrate the advantages of modern media, resulting in the failure to maximize the utilization of teaching resources. More importantly, many colleges and universities have not yet established a systematic evaluation and feedback mechanism for integrated media teaching, resulting in the lack of scientific data support and theoretical guidance for the continuous improvement and optimization of teaching effects during the experimental teaching process.

2.2. The main existing problems: technology, teaching staff and curriculum design

Although the experimental teaching system of integrated media in colleges and universities has developed and been applied to varying degrees in recent years, it still faces many problems that need to be solved urgently in the actual promotion process, especially in terms of technical infrastructure, teaching staff and curriculum setting, etc[3]. Technical issues are one of the core bottlenecks restricting the development of integrated media experimental teaching in colleges and universities. Although most colleges and universities have been equipped with basic multimedia devices, the depth and breadth of overall technical support still cannot meet the needs of high-quality integrated media experimental teaching. On the one hand, the technical equipment in some colleges and universities is outdated, the network environment is unstable, and even the phenomenon of information islands exists, which makes it difficult to effectively realize the sharing

and interaction functions of teaching resources. On the other hand, the experimental teaching of integrated media has relatively high requirements for the technical platform. However, many universities have not invested sufficient funds and energy, resulting in the lag in the research and development and maintenance of their integrated media teaching platforms, and the lack of systematic and operational guarantees. How to break through technical obstacles and establish a stable and efficient experimental teaching platform for integrated media has become an urgent task for improving teaching quality.

The insufficiency of teaching staff is also a prominent problem in the current experimental teaching system of integrated media. Integrated media teaching not only requires teachers to possess traditional subject knowledge and teaching abilities, but also demands that they be proficient in the application of multimedia technology and related tools[4]. In actual situations, many teachers are still stuck in the mindset of traditional teaching models and lack an in-depth understanding and application of the concept of integrated media teaching. This situation is particularly serious in smaller-scale or universities in the central and western regions. Teachers not only face the predicament of being inproficient in the use of technology, but also lack effective training and development opportunities, making it difficult for them to adapt to the demands of teaching reform. Even though some colleges and universities have begun to conduct teacher training, due to the lack of a long-term and systematic training mechanism, there is still a considerable lag in the improvement of teachers' digital literacy and the ability of integrated media teaching[5].

2.3. The influence of the integrated media experimental Teaching System on the cultivation of students' abilities

The construction of the experimental teaching system of integrated media in colleges and universities has not only had a profound impact on the teaching content and methods, but also played an important role in the cultivation of students' abilities. As a multi-channel and highly interactive teaching method, the integrated media, through its unique characteristics of multi-media integration, provides students with broader ways to acquire knowledge and learning experiences, which undoubtedly promotes the improvement of students' comprehensive qualities. The integrated media teaching system can effectively enhance students' information processing and analysis abilities. In the traditional teaching mode, students' ways of acquiring knowledge are mostly limited to the single lecture-based approach. However, the integrated media experimental teaching integrates various media such as text, audio, video and interactive platforms to stimulate students' interest in active learning, enabling them to conduct information screening and analysis more flexibly under the multi-dimensional presentation of information. When students use these various tools and platforms, they gradually enhance their acuity, judgment ability and screening skills for information. Especially when dealing with complex information, they demonstrate stronger comprehensive analysis and problem-solving abilities.

Integrated media teaching has a significant promoting effect on the cultivation of students' innovative thinking and practical ability. In the traditional teaching environment, students' knowledge is often fragmented and lacks in-depth integration across disciplines and fields. The integrated media teaching emphasizes the integration and interaction of interdisciplinary resources and encourages students to carry out autonomous learning and innovative experiments from multiple perspectives. This teaching method not only provides students with a space for free exploration, but also stimulates their creativity, helps them combine theoretical knowledge with practical application, and cultivates more innovative and practical abilities. Through the integrated media platform, students can constantly adjust and optimize their thinking patterns in practice, thereby effectively enhancing the flexibility and creativity in problem-solving.

3. The theoretical basis for constructing the experimental teaching system of integrated media in colleges and universities

3.1. From the perspective of educational technology: Technology-driven and educational model innovation

In the process of constructing the experimental teaching system of integrated media in colleges and universities, educational technology provides crucial theoretical guidance, especially from the dual perspectives of technology-driven and educational model innovation. Educational technology essentially emphasizes the deep integration of technology with educational content and methods. It holds that the introduction of technology is not only an update of teaching means but also a catalyst for the transformation of educational models. From this perspective, the construction of the integrated media experimental teaching system is not only a supplement to the traditional teaching mode, but also a systematic innovation in educational concepts and methods. In this process, the role of technology is not merely confined to the simple tool level, but penetrates into every link of teaching design, teaching implementation and even teaching evaluation, promoting the transformation of education from content transmission to formal expression, and from teacher-led to student-centered.

The innovation of educational models driven by technology is first reflected in its challenge and transformation of traditional teaching methods. In the traditional teaching mode, students are mostly in a passive state of accepting knowledge, and the teaching process is relatively simple and limited to the two-way interaction between teachers' lectures and students' listening. The introduction of converged media technology, especially the application of multimedia, multiple platforms and multiple channels, provides more diverse and flexible ways for teaching. Through the interactive use of various media such as images, sounds, animations and videos, teaching content can be presented more vividly and intuitively, and students' sensory experiences and learning interests have been significantly enhanced. The interactivity and participation of the integrated media platform have provided students with more opportunities for autonomous and personalized learning. The teacher-led role in the teaching process has gradually transformed into students' autonomous exploration and cooperative learning. The learning methods have become more diverse, and the dominant position of students has become increasingly prominent.

From the perspective of educational technology, it is emphasized that the introduction of technology is not only an innovation in teaching methods, but also an opportunity for a fundamental transformation of teaching models. With the rapid development of the Internet and digital technology, the traditional closed, in-classroom teaching form can no longer meet the demands of contemporary students for the breadth and depth of knowledge. The experimental teaching system of integrated media, by introducing cutting-edge technologies such as cloud computing, big data and artificial intelligence, has broadened the temporal and spatial boundaries of teaching, achieved a deep integration of online and offline, virtual and real, and created a more open and flexible learning environment. Students can obtain learning resources anytime and anywhere through self-study, cooperative learning, practical operation and other methods, and carry out personalized knowledge construction and skill improvement. Technology not only provides students with more abundant learning resources and practical platforms, but also offers teachers more precise data support and feedback mechanisms for their teaching design and implementation, enabling teaching assessment and adjustment to be more real-time and efficient.

3.2. The Implications of Constructivist Learning Theory for the Experimental Teaching of Integrated Media

Constructivist learning theory, as one of the important paradigms of modern educational psychology, emphasizes that knowledge is not instilled by teachers but is an active construction process in the interaction between learners and the environment. This theory provides profound inspiration and theoretical support for the construction of the experimental teaching system of integrated media in colleges and universities. Specifically, constructivism advocates stimulating students' active participation and in-depth thinking through scenario simulation, problem exploration and collaborative interaction in real situations, which precisely aligns with the multimodal presentation, cross-platform interaction and personalized paths in integrated media teaching. In the environment of integrated media, students are no longer merely passive recipients of information. Instead, they participate in the understanding, reproduction and transfer of knowledge through various media such as pictures, texts, audio and video, and virtual reality in a multi-sensory and multi-channel way. This process highly embodies the "situational learning" and "meaning negotiation" emphasized by constructivism.

More crucially, constructivism advocates a student-centered approach and encourages the stimulation of students' cognitive conflicts and intrinsic motivation through problem-oriented learning activities. On this basis, the experimental teaching of integrated media, through strategies such as task-driven, project-based learning, and role-playing, encourages students to actively explore solution paths when facing open problems and complex tasks, and to construct their own knowledge system through continuous attempts and reflections. This exploratory and reflective learning approach forms a natural fit with the dynamic learning environment constructed by the integrated media: students can continuously obtain feedback and correct their paths on the platform, achieving the unity of individual learning goals and group collaboration goals. Furthermore, constructivism emphasizes the social nature of learning, believing that the generation of knowledge cannot be separated from the interaction and collaboration among people. The social function of new media convergence precisely builds such a multi-directional communication and co-construction and sharing learning ecosystem. In discussion areas, learning communities or virtual groups, students achieve the joint construction of knowledge through the collision of viewpoints and the exchange of experiences, jointly negotiate the meaning and expand the cognitive boundaries.

From the perspective of instructional design, constructivism requires that the role of teachers transform from "knowledge transmitters" to "learning facilitators" and "environment creators". In the experimental teaching of integrated media, teachers not only need to design diverse and challenging learning tasks, but also need to be good at mobilizing students' autonomy and creativity, and construct a learning field that supports inquiry, encourages collaboration and provides timely feedback. This transformation of roles places higher demands on teachers' professional qualities and technical capabilities, and also prompts educators to constantly reflect on and update their teaching concepts. In conclusion, the constructivist learning theory not only provides a theoretical basis for the experimental teaching system of media convergence in colleges and universities, but also points out the direction at the practical level: taking real tasks as the carrier, students as the center, collaboration as the mechanism, and reflection as the driving force, thereby achieving a profound transformation of the teaching mode and a comprehensive improvement of students' abilities.

3.3. Media convergence integration strategies in the higher education curriculum system

In higher education, the integration of new media is an innovation in teaching concepts and models. The development of information technology is rapid. Traditional teaching methods can no

longer meet the diversified needs of students. Integrating multimedia technology into the curriculum system has become the key to educational reform. The integration of new media requires interdisciplinary cooperation, combining multiple media forms to create an interactive and immersive learning environment and stimulate students' interest. For instance, sociology and history courses are combined with video documentaries and lectures to expand the depth and breadth of learning. The integration of new media convergence is not a simple accumulation but focuses on in-depth exploration of content. The course content is centered around the teaching objectives, ensuring that each form of media helps students understand the knowledge. For example, experimental teaching can be carried out by using multimedia platforms, and understanding can be deepened through interactive methods such as virtual operations, breaking through the one-way limitation of traditional teaching. The integration of new media convergence still requires the innovation of the course evaluation mechanism. Traditional assessment methods focus on written tests, while the evaluation of multimedia courses should emphasize practice and innovation, and adopt diversified means such as online interaction and project assessment to comprehensively reflect students' comprehensive qualities in the multimedia environment.

4. Optimization Paths for the Experimental Teaching System of Media Convergence in Colleges and Universities

4.1. Innovation in curriculum design and teaching content

In the process of promoting the optimization of the experimental teaching system of integrated media in colleges and universities, the innovation of course design and teaching content is undoubtedly one of the core driving forces. With the continuous development of information and digital technologies, the traditional teaching mode and content presentation methods have gradually exposed their limitations and are unable to meet the needs of contemporary students for diversified and personalized learning. How to make full use of the integrated media technology in curriculum design to achieve in-depth innovation in teaching content and teaching forms has become one of the key factors for improving teaching quality. The innovation of course content should focus on the integration across disciplines and fields. In the teaching of integrated media, the boundaries between disciplines are no longer the constraints of instructional design. Teachers can design course contents that not only meet the requirements of disciplines but also expand students' thinking by integrating knowledge from multiple disciplines. For instance, in the experimental courses of science and engineering, integrating contents such as data analysis, artificial intelligence and virtual experiments not only enables students to deepen their understanding of technological applications on the basis of theoretical learning, but also stimulates their innovative thinking and practical abilities through an interdisciplinary perspective.

The curriculum design should focus on flexibility and interactivity, and give full play to the role of integrated media technology in the personalized learning path. Traditional curriculum design often focuses on lecturing, neglecting students' initiative and interactivity during the learning process. The introduction of integrated media technology has made the presentation forms of teaching content more diverse. Students can participate in the learning process through various means such as videos, animations, and virtual simulations, thereby enhancing the sense of immersion and participation in learning. Against this backdrop, curriculum design is no longer merely about imparting knowledge, but rather a process that encourages students to engage in independent exploration, critical thinking and collaborative learning. By setting up learning tasks that combine online and offline learning, teachers can guide students to engage in interactive discussions, project collaborations, and experimental designs on virtual platforms, thereby promoting students' autonomous learning and the collision of collective wisdom.

The innovation of teaching content is not only limited to the innovation at the technical level, but also should pay attention to the sociality and practicality of the content. In the experimental teaching of integrated media, students can feel the practical application value of knowledge through the connection with real social problems. For instance, in courses such as environmental science and sociology, teachers can design practical tasks related to social hot issues, encourage students to combine the theories they have learned, and use the new media platform to conduct research, analysis and presentation, thereby enhancing students' ability to solve practical problems. In addition, the innovation of course content should also be in line with the development of The Times and the demands of the industry, cultivating students' stronger sense of social responsibility and innovative spirit.

4.2. Construction and development of the teaching staff: Enhancement of capabilities and qualities

In the process of constructing and optimizing the experimental teaching system of integrated media in colleges and universities, the professional ability and comprehensive quality of the teaching staff not only determine the quality of teaching implementation, but also directly affect whether educational innovation can truly take root. As a new teaching model that integrates technology, content and educational concepts, multimedia teaching poses more complex requirements for teachers. They need to have a solid foundation of subject knowledge, master the application ability of emerging media technologies, and possess multiple capabilities such as teaching design, project management and educational communication. The traditional teacher training model has become inadequate in the face of the challenges of integrated media teaching. It is necessary to promote teachers to achieve a deep leap in both the concept and practice dimensions through a systematic and multi-level ability construction mechanism. At the level of ability structure, teachers should enhance their operational skills in digital tools and platforms, be proficient in using various technical resources such as video editing, interactive software, and virtual simulation, and effectively embed them into the teaching process to achieve digitalization and multimedia throughout the entire process from content design to presentation and evaluation.

Merely having proficient operation at the tool level is not sufficient to cope with the complexity of the teaching situation. More crucially, teachers need to complete the role transformation from "indoctrinators" to "guides", "organizers" and "collaborators" at the conceptual level. The experimental teaching of integrated media requires that teachers no longer hold a monopolistic position in knowledge transmission during the teaching process. Instead, they should participate in it as the constructors of the learning environment and the promoters of students' cognitive growth. This role transformation requires teachers to possess a higher level of teaching strategy ability and educational reflection awareness, be able to implement dynamic adjustments according to the differentiated needs of students, and promote the deep integration of teaching content and technical means. Teachers introduce mechanisms such as emotional support and collaborative feedback in the interaction between teachers and students, and build a teaching ecosystem centered on students, supported by technology and centered on interaction. To this end, colleges and universities should build diversified platforms for teacher development. Through practical training, mutual assistance among peers, cross-school exchanges and other means, they should broaden teachers' educational horizons and enhance their comprehensive teaching quality and media literacy.

The construction of the teaching staff should also take into account organizational culture and institutional guarantee. In the actual teaching environment, the initiative of individual teachers is often influenced by institutional incentives. Colleges and universities should establish a scientific and reasonable evaluation and incentive system for integrated media teaching, incorporate teaching

innovation achievements, technology integration capabilities and student evaluation results into the teacher assessment index system, and guide teachers to internalize teaching reform as a professional pursuit through institutionalized means. At the same time, in terms of organizational structure, the construction of the teaching community should be strengthened. Through cross-professional team collaboration, the implementation of interdisciplinary projects and other means, knowledge sharing and experience dissemination among teachers should be promoted to form a teacher growth ecosystem of "co-construction, co-creation and co-evaluation". In conclusion, the construction and development of the teaching staff is not only the backbone force for optimizing the experimental teaching system of integrated media, but also a key pillar for the modernization transformation of teaching in colleges and universities.

4.3. Improvement of technical support and infrastructure

In the optimization process of the experimental teaching system of integrated media in colleges and universities, technical support and the improvement of infrastructure play a crucial role. With the rapid development of educational informatization, integrated media teaching not only relies on teachers' teaching ability and concepts, but is also closely related to the technical environment and infrastructure of the school. The improvement of infrastructure is not only about the configuration of hardware facilities, but also includes the overall construction of software platforms, network environments and data management systems. When promoting integrated media teaching, colleges and universities must ensure the advancement and stability of classroom equipment, especially in terms of investment in network bandwidth, server capacity, virtual reality equipment, etc., to meet the growing teaching demands. For efficient multimedia content transmission and real-time interaction, it is necessary to rely on high-speed and stable network infrastructure to avoid affecting the teaching effect due to problems such as network delay and equipment failure during the teaching process.

The construction of the technical support system is not only limited to hardware facilities, but also requires the deep integration and innovation of software systems. The development and maintenance of the integrated media teaching platform have become a key link for colleges and universities to improve the teaching quality. At present, the investment of many colleges and universities in this aspect is still in its infancy. The functions of many integrated media platforms are relatively single, and the sharing and interaction of teaching resources have not been fully realized. In order to truly achieve cross-platform and multi-terminal integrated media teaching, schools need to invest in developing a teaching management system that meets actual needs, ensuring seamless content connection, personalized learning paths for students, and real-time feedback functions for teachers. For instance, a learning analysis system that combines big data and artificial intelligence can track students' learning progress in real time, analyze the difficulties in learning, and provide teachers with precise basis for teaching adjustments. This kind of personalized teaching based on data analysis can greatly enhance learning outcomes and students' sense of participation.

The core of technical support is also reflected in the technical training for teachers and students. Having complete hardware and software facilities alone is far from enough. How to effectively apply these technologies to teaching practice and how to help teachers quickly master various emerging technologies and enhance their information-based teaching capabilities is another urgent problem to be solved. Colleges and universities should establish a continuous technical support service system. Through regular training, technical guidance and online support, they should help teachers master the use of new media tools, overcome technical obstacles, and thereby transform the advantages of technology into teaching effects. The technical support for students in the integrated

media environment should not be ignored either. With the popularization of various new learning platforms and tools, students need to master platform operation and content creation skills through training in order to better adapt to the integrated media teaching environment.

5. Conclusions

This paper analyzes the current situation of the experimental teaching system of integrated media in colleges and universities, reveals the main problems existing in the current implementation process, and proposes optimization paths from aspects such as technology, teaching staff and curriculum setting. The improvement of technical support and infrastructure is the basis for promoting the in-depth development of integrated media teaching. Only by providing a stable and intelligent technical platform for teachers and students can the efficient conduct of teaching activities be ensured. The construction and capacity improvement of the teaching staff are of vital importance to the experimental teaching of integrated media. Teachers not only need to have solid subject knowledge, but also master the application ability of modern educational technology to promote the transformation of educational concepts. The innovation of curriculum design and teaching content is an important way to optimize the teaching system. Through interdisciplinary integration and interactive learning design, students' autonomous learning ability and innovative thinking can be better stimulated. The optimization of the experimental teaching system of integrated media in colleges and universities is not merely an update at the technical level, but also a profound transformation of teaching concepts and educational models. It must be comprehensively advanced from all dimensions to achieve true innovation and transformation in education.

References

[1] Zhao Dongming, Zhang Beibei The Logic, Characteristics and Optimization Paths of Ideological and Political Education Discourse in Colleges and Universities in the Era of Converged Media [J] School Party Building and Ideological Education,2023(5):80-83.

[2] Feng Jingzhao, Yang Xi. Research on the Construction Status, Problems and Optimization Paths of "Short Video" Platforms in Higher Education Institutions in the Era of Converged Media [J] China Media Technology, 2022(2):115-117.

[3] Ding Rui. Challenges and Optimization Paths of Legal Education for Students in Higher Vocational Colleges from the Perspective of Integrated Media [J] Business Information,2021(36):0116-0118.

[4] Niu Qiaochu. Research on the Practice Model and Optimization Path of Ideological and Political Education in Colleges and Universities in the Era of Converged Media [J]. Wudang,2023(9):70-72.

[5] Wu Ning, He Ningning, Wu Yimei. Exploration of the Optimization Path for the Construction of Blended Teaching Resource Libraries in the Era of Converged Media [J]. Journal of Multimedia and Network Teaching in China (Upper Ten-month Issue),2023(11):21-24.