

Study of Optimisation Strategies for Online Educational Technology Management

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Abstract

The status of online education is becoming more and more prominent, but the current online education mechanism exists in a single teaching method, platform service capacity is insufficient, teaching content to be optimized, and the lack of synergy of participating subjects and other problems. This paper proposes optimization strategies such as diversification of teaching methods, enhancement of teaching platform service capacity, optimization of teaching content, strengthening of synergy of participating subjects, etc. Combined with specific case studies, it aims to provide reference for online education to improve the quality and effect of education, help its sustainable development and innovation, and provide students with better quality education services.

Keywords

Online Education; Technology Management; Optimization Strategy.

1. Introduction

Online education occupies an increasingly important position in modern education, however, there are still some problems with the current online education in terms of education management system, which are further optimized to improve the quality and effectiveness of education. The purpose of this paper is to discuss the optimization strategy of the education management system of online education and provide reference for the development of online education.

With the rapid development of information technology, online education has sprung up, providing learners with a more convenient and flexible way of learning. However, online education also faces some challenges in the process of development. For example, the quality of courses varies, the learning experience is poor, and the platform technology is unstable, all of which affect the quality and effect of online education. Therefore, optimizing the education management system of online education and improving the quality and effect of education have become important tasks in the development of current online education.

Research background: with the rapid development of information technology, the penetration of the Internet in the field of education is deepening, online education came into being and rapidly expanded. Especially in special times such as blizzards and epidemics, online education has become an important means of educational continuity. In the process of its rapid development, many problems have been exposed, such as teaching methods, TV aerial classroom is poorly targeted and weakly interactive, and live teaching is restricted by the network; platform services, facing network congestion, insufficient technical support, etc.; teaching content exists in the lack of resources, lack of precision, etc.; lack of effective synergy between the participating subjects, etc., which constrain the full play of the function of online education.

1.1. Research Purpose

In-depth analysis of the existing problems of online education mechanism, and then put forward targeted and operable education mechanism optimization strategy, to build a more perfect and efficient online education operation mechanism, to improve the quality and effect of online education, so that online education can better meet the learning needs of students and adapt to the requirements of modern education development.

1.2. Research Significance

From the theoretical level, it helps to enrich the theoretical system related to the mechanism of online education, providing a theoretical basis and analytical framework for subsequent research; from the practical level, it can provide practical guidance for the operators and educators of online education, optimize the process of teaching practice, improve the quality of teaching services, promote students to learn more effectively, promote the healthy and sustainable development of the online education industry, narrow the gap in educational resources, and Promote the realization of educational equity.

2. Overview of Online Education

2.1. Development History of Online Education

Online education originated from the concept of distance education, and gradually matured with the development of Internet technology. From the earliest e-mail, BBS to the present MOOCs (Massive Open Online Courses) and SPOCs (Small Scale Restricted Online Courses) and other forms, online education has formed a complete industrial chain.

The development of online education has gone through four stages: the release of a single course in stage 1.0; the construction of course libraries in stage 2.0; social learning in stage 3.0; and the design of personalized learning paths in stage 4.0. Currently, more and more platforms are focusing on students' personalized needs and learning effects, and providing students with customized learning experiences through big data analysis and artificial intelligence technology. Online education will continue to deepen cooperation with brick-and-mortar schools to promote the balanced distribution of educational resources, while exploring more learning modes and technological means, such as virtual reality and augmented reality, in order to enhance students' learning experience and quality.

2.2. Teaching Resources and Tools for Online Education

Online education provides a wealth of teaching resources, including video lectures, interactive experiments, case discussions and other forms to help students understand knowledge from different perspectives. Various learning tools are also provided, such as online tests, learning path planning, and learning outcomes display, to help students conduct self-assessment and reflection. In addition, some platforms have introduced artificial intelligence technologies, such as intelligent tutoring systems and automatic grading systems, in order to improve teaching efficiency and students' learning outcomes.

2.3. Modes and Challenges of Online Education

The modes of online education mainly include course sales, enterprise cooperation, advertising revenue and so on. Among them, course sales are the most important source of income, while corporate cooperation and advertising revenue help platforms expand market share and increase awareness. Despite the remarkable development of online education, it still faces many challenges. For example, how to ensure teaching quality and student satisfaction; how to deal with intellectual property and copyright issues; and how to cope with competition and regulatory pressure. Online education continues to innovate its mode and improve its service quality to meet the changing market demand and policy environment.

3. Optimization of Curriculum Resources

3.1. Definition and Classification of Curriculum Resources

3.1.1. Definition of Curriculum Resources

Curriculum resources are various materials used in the educational process, including teaching materials, teachers, students, classroom environment and so on. Online educational resources are educational resources that are disseminated and used through online platforms, such as videos, audios, texts, pictures and so on.

3.1.2. Classification of Curriculum Resources

According to different standards, curriculum resources can be divided into different types, such as according to the form of media can be divided into digital resources and paper resources; according to the content attributes can be divided into textbooks, teaching aids, exercises, etc.; according to the use of the object can be divided into general resources and specialized resources, etc.

3.2. Acquisition and Integration of Curriculum Resources

3.2.1. Access to Curriculum Resources

Online education resources can be accessed through a variety of ways, such as official websites, third-party platforms, social media and so on. Educational institutions and individuals can choose the appropriate access route according to their needs.

3.2.2. Integration Methods of Curriculum Resources

In order to facilitate the use and management, the acquired curriculum resources are integrated. Digitalization can be used to integrate various types of resources onto a platform, or integration can be carried out through the establishment of resource libraries. The process of resource integration is also monitored and managed to ensure the integrity and security of the resources.

4. Status Quo and Problems of Online Education Mechanism

4.1. Single Teaching Method

Television air classroom is the key form of “non-stop class non-stop school”, with the help of satellite live broadcast, its signal is stable, can reach remote and poor areas, the course is mostly recorded by the education department or selected by the famous teacher class and unified broadcasting, can meet the needs of most students. However, it has limitations, a single teaching method, the implementation of the curriculum lacks relevance, students are difficult to personalized learning according to their own learning progress and difficulties. Moreover, because there is no interactive mechanism, students can not instantly solve the problems encountered in learning, and the lack of communication with teachers and students, which to a certain extent will weaken the students' enthusiasm for learning [1].

Online live teaching has strong flexibility and good interactivity, which is more suitable for upper elementary school and secondary school students to carry out learning activities, but it has higher requirements for the basic network [2]. Teachers can interact with students in real time through the live broadcast platform to answer students' questions and increase student participation. Online live teaching can adjust the teaching content and progress according to the feedback of students, so as to better meet the needs of students. However, online live teaching is highly dependent on the basic network conditions, once the network is unstable, the online teaching and learning experience of teachers and students will be adversely affected, with problems such as lagging and dropping [1].

4.2. Problem Description

A single teaching form can not meet the needs of different students, affecting the enthusiasm of students to learn. At present, the teaching method of online education is relatively single, mainly based on TV air classroom and online live teaching. Although the TV air classroom can cover a wide range, but the relevance and interactivity is insufficient; although the flexibility and interactivity of online live teaching is better, but the network requirements are high. This single form of teaching cannot meet the learning needs of different students, for example, more interactive and personalized guidance for students with a weaker learning foundation; and possibly more in-depth learning resources and challenges for students with stronger learning abilities. A single form of teaching is prone to make students feel boring, which adversely affects their learning motivation and initiative [3,4].

Online live teaching is highly dependent on network conditions, once the network is unstable, lagging, dropping and other phenomena will occur frequently, greatly interfering with teachers and students' online teaching experience [1]. Technical support is not in place will also bring trouble to the teaching, for example, in the teaching process of technical failure but can not be resolved in time, which not only wastes the teaching time, but also affects the teaching progress and the mood of teachers and students.

The comprehensive service capacity of the teaching platform needs to be improved, and there are currently some problems in network teaching, resource on demand and other activities. Network congestion is one of the common problems, tens of thousands of people learning online at the same time may cause network congestion, affecting the normal progress of teaching. In addition, the resource-on-demand function of the teaching platform may not be perfect enough, and the categorization of resources is not clear, which makes it difficult for students to quickly find what they need; the resources are not updated in a timely manner, which can't satisfy the students' demand for the latest knowledge. The development of online tutoring, discussion, Q&A and other activities is also not satisfactory enough, with insufficient interactivity, so that students' questions cannot be answered in time, affecting students' motivation and learning effect.

At present, there are many problems with online education in terms of teaching content. On the one hand, some disciplines have insufficient resources and single teaching content, making it difficult to meet the diverse learning needs of students. For example, there is a lack of curriculum resources for some niche subjects or emerging fields, and students are unable to obtain comprehensive knowledge. The single form of teaching content is easy to make students feel boring and lack of motivation and interest in learning [4-6]. On the other hand, the teaching content lacks scientificity and accuracy, which not only affects students' correct understanding and mastery of knowledge, but also may mislead them. Some online education, in order to pursue fast on-line courses, does not strictly audit and gatekeeper the teaching content, which leads to the dissemination of wrong information. In addition, the precise design of teaching content is a new topic, and online education is currently deficient in using big data to provide personalized teaching solutions. Although big data technology provides the possibility of personalized teaching, many platforms fail to fully explore the value of data, and it is difficult to thoroughly understand the characteristics of students at different stages, and it is also impossible to track students' online learning behavior, so it is difficult to develop a personalized teaching strategy that effectively meets the needs of students [1]. This makes students in the learning process can not get targeted guidance, affecting the learning effect.

The main bodies involved in online education include education administrators, teachers, parents and students, but the current lack of synergy between all parties affects the effectiveness of online teaching. On the one hand, teachers are rusty to online teaching methods. Most teachers are accustomed to the traditional face-to-face teaching methods, and when they

directly carry out online teaching for the first time, they have insufficient skills in the utilization of teaching resources and teaching design. For example, some teachers have difficulties in integrating online learning resources and rationally designing learning contents, which makes it difficult for them to create a good “sense of presence” in online learning. On the other hand, there are big differences in the conditions of students' families, such as the network environment, learning equipment and other aspects, resulting in a wide range of online learning environments. Parents need to be involved in the learning process of younger students, while families with poor family conditions or many children face even more significant difficulties in online teaching. Students' lack of self-management skills when they are removed from the regular learning environment also affects the effectiveness of online teaching and learning. Due to the lack of collaborative participation of all parties, the effect of online teaching is difficult to meet expectations. The education sector needs to focus on top-level design, coordinate the integration of teaching resources and online teaching technology, and improve teachers' online teaching skills training. Frontline teachers should be open-minded and information-sensitive, practicing the concept of “student-centeredness”, learning to integrate online learning resources and rationally designing learning content. Parents should not only build a good learning environment for their children, but also play a role model, work closely with teachers to follow up on their children's learning progress, and assist teachers to fulfill their role as teaching assistants. Students should give full play to their initiative, broaden their knowledge with the help of multiple learning platforms, strengthen their time management ability, and complete learning tasks independently to improve learning efficiency [1]. Only through the joint efforts of all parties and collaborative participation can the effectiveness of online teaching be improved.

4.3. Optimization Strategy of Online Education Mechanism

4.3.1. Diversification of Teaching Methods

Select appropriate teaching methods for students of different grades, such as the use of online classrooms combined with independent learning for senior students. Senior students already have a certain degree of independent learning ability, and the online classroom can provide students with abundant learning resources and flexible learning time planning. Students can choose their own learning content and rhythm according to their own learning process and needs [1]. Moreover, the process of independent learning helps to cultivate students' independent thinking and problem-solving ability. In the online classroom environment, students can also interact with teachers and students in the form of online discussion and group collaboration, sharing their learning experience with each other to enhance learning effectiveness [7,8].

Lower grades students guide their parents through the online platform for course learning. For students in the lower grades, their learning is more accompanied and guided. Guiding parents in course learning through online platforms can allow parents to better understand their children's learning content and learning progress, participate in the learning process with their children, and enhance parent-child relationships. The online platform can provide parents with a wealth of teaching resources and teaching guidance to help them better carry out family education. Parents can also communicate and exchange ideas with teachers through the online platform, provide timely feedback on their children's learning, and jointly promote their children's growth.

Utilizing the advantages of various teaching methods to improve students' motivation to learn. Different teaching methods are suitable for students of different ages and can meet their learning needs and interests. Through diversified teaching methods, students can experience the fun of learning in different learning environments and improve their motivation and

initiative in learning. Diversified teaching methods can also promote the overall development of students and cultivate their comprehensive quality and ability.

4.3.2. Enhance the Service Capability of the Teaching Platform

Optimize the interface design and provide a friendly user operation experience. Online education should focus on the simplicity and intuitiveness of the interface design. A simple interface layout allows users to quickly find the functions and information they need and avoid confusion due to complex operations. Intuitive icons and instructions can help users easily understand the purpose of each function and improve the convenience of operation. For example, clear classification labels can be used to clearly divide the sections of course resources, learning tools, interactive communities, etc., so that users can quickly locate them. In addition, the color scheme should be comfortable and harmonious, avoiding overly harsh or confusing color combinations to give users a good visual experience. In the operation process, the steps should be simplified as much as possible to reduce the number of user clicks and operation time. For example, one-click login, quick course selection, convenient learning progress view and other functions can greatly enhance the user's operating experience.

Add interactive elements to improve learner participation. Interaction is an important part of online education, which can effectively improve trainees' participation and learning effect. The platform can set up an online discussion forum for trainees to exchange ideas and discuss problems at any time during the learning process. Teachers can also participate in it to answer trainees' questions and guide the direction of discussion. In addition, conducting online group activities is also an effective way of interaction. Learners can form groups to work together to complete project tasks or conduct case studies to develop teamwork and problem-solving skills. The platform can also introduce interactive course content, such as question-and-answer sessions and voting activities, to increase the interest and participation in learning. For example, questions can be inserted into the course video for students to think and answer during the viewing process, so as to test the learning effect in time. The platform can organize online competitions to stimulate the trainees' sense of competition and improve their motivation to learn.

Provide personalized recommendation of learning resources according to students' learning progress and ability. Through big data analysis and artificial intelligence technology, online education can understand the learning progress and ability level of students and provide personalized learning resources recommendations. For learners with faster learning progress, some expansive learning content can be recommended, such as in-depth thematic lectures, advanced courses, etc., to meet their further demand for knowledge. For students with slower learning progress, we can recommend some basic review materials and tutorial courses to help them consolidate what they have learned. According to the learning ability and interests of students, the platform can customize a personalized learning path for them. For example, for students who like practical operation, more experimental courses and case studies can be recommended; for students who are good at theoretical learning, more academic lectures and research papers can be recommended. This allows students to access suitable learning resources more efficiently in the learning process and improve the learning effect.

Enhance the user experience to ensure the normal conduct of online teaching. By optimizing the interface design, increasing interactive elements and providing personalized recommended learning resources, online education can provide students with a more comfortable, convenient and efficient learning environment and improve the user experience. A good user experience can attract more students to choose online education and increase the popularity and influence of the platform. These strategies can also ensure the normal operation of online teaching. Optimized interface design can reduce technical failures and operational errors, increased interactive elements can improve students' participation and motivation to learn, and

personalized recommendation of learning resources can meet the different needs of students and improve the learning effect. All these help to improve the quality and efficiency of online teaching and ensure the smooth implementation of teaching activities.

4.3.3. Optimize Teaching Content

Strengthen the precise planning of teaching content and formulate personalized teaching strategies. Online education needs to make good use of big data technology to deeply analyze the characteristics of students at all stages and track and record their online learning performance. Based on the results of data analysis, students can create individualized teaching plans and personal growth plans [8-10]. For example, we can recommend appropriate course content and learning resources for students according to their learning progress and ability level. For students with faster learning progress, some expansive learning content is recommended, such as in-depth lectures and advanced courses; for students with slower learning progress, some basic review materials and tutoring courses are recommended. According to the students' interests and learning styles, we customize personalized learning paths for them to improve their learning results.

Strengthen the standardized management of online teaching content to ensure the scientificity and accuracy of resources. Online education should establish a strict audit mechanism for teaching content to ensure that the uploaded teaching resources meet the requirements of scientificity and accuracy. For course content, strict screening and auditing should be carried out to avoid the dissemination of erroneous information. The management and training of teachers should be strengthened to improve their teaching level and professionalism and ensure the quality of teaching content [1]. In addition, the platform can introduce a third-party organization to evaluate and certify the teaching content to improve the credibility and authority of teaching resources.

Regularly update the course content and teaching resources to keep pace with the development of the industry. With the continuous progress of science and technology and the rapid development of the industry, knowledge is constantly being updated. Online education should regularly update course content and teaching resources to ensure that students have access to the latest knowledge and information. The platform can invite industry experts and scholars to participate in the updating and optimization of the courses to improve the quality and usefulness of the courses [11,12]. The platform can also understand the needs and concerns of students through user feedback and data analysis, and make targeted adjustments and updates to the course content.

Improve teaching effect and meet students' learning needs. Optimizing the teaching content can enable students to obtain more accurate, scientific and practical learning resources and improve their learning effect. Personalized teaching programs and course content synchronized with the development of the industry can also meet the different learning needs and interests of students, and stimulate students' enthusiasm and enthusiasm for learning [13].

4.3.4. Strengthen the Synergy of Participating Subjects

The education sector to do a good job of top-level design, coordinated planning for the integration of teaching resources and technical support [14]. Education departments assume important leadership and planning responsibilities in online education. On the one hand, top-level design should be carried out at the macro level, the development direction and goal of online education should be clarified, and relevant policies and regulations should be formulated to provide institutional guarantee for the development of online education. On the other hand, it is necessary to coordinate the planning of the integration of teaching resources, establish a unified teaching resource platform, integrate various types of high-quality educational resources, and realize the sharing and optimal allocation of resources. Increase investment in online education technology protection, strengthen network infrastructure construction,

improve network bandwidth and stability, and ensure the smooth progress of online teaching. In addition, the education department should also organize and carry out teacher training to improve teachers' information technology application ability and online teaching level, so as to provide talent support for the development of online education.

Teachers learn to apply online tools and reasonably design learning content. Teachers are the implementers of online education, and their ability to apply online tools and design learning content directly affects the quality of online teaching. Teachers should actively learn and master a variety of online teaching tools, such as online live platforms, teaching management systems, learning resource libraries, etc., and skillfully use these tools for the organization and management of teaching activities. In terms of learning content design, teachers should rationally arrange the teaching content and teaching progress according to the characteristics and needs of students, focusing on the fun and practicality of the teaching content. Teachers can also utilize online tools to carry out diversified teaching activities, such as group discussions, online quizzes, project-based learning, etc., to improve students' participation and learning effect.

Parents create a favorable learning environment for their children and assist teachers. Parents also play an important role in online education. Parents should create a good learning environment for their children, including the provision of a quiet learning space, equipped with the necessary learning equipment. Parents should pay attention to their children's learning, maintain close communication with teachers, keep abreast of their children's learning progress and learning problems, and assist teachers to do a good job in their children's education. In addition, parents can also stimulate their children's interest in learning and cultivate their children's good learning habits by accompanying their children in learning and participating in their children's learning activities.

Students play the subjective initiative, independently complete the learning task. Students are the main body of online education, and the play of their subjective initiative plays a crucial role in the learning effect [15]. Students should establish the consciousness of independent learning, actively participate in online learning activities, reasonably arrange the learning time, and independently complete the learning tasks. In the learning process, students should make good use of various learning resources, such as online courses, learning forums, learning communities, etc., to expand their knowledge and vision. Students should also actively interact with teachers and classmates, share learning tips and experiences, and improve their learning ability and comprehensive quality [10].

Strategy Advantages

Improve the effectiveness of online teaching and promote the overall development of students. By strengthening the synergy of participating subjects, the advantages of each subject can be fully utilized to improve the effectiveness of online teaching. The top-level design and resource integration of education departments provide policy support and resource guarantee for online education; the professional teaching and content design of teachers provide students with high-quality learning content and teaching services; the assistance and support of parents create a good learning environment for students; and the subjective initiative and independent learning ability of students are the key to the success of online education. The synergistic effect of each participating body can promote the comprehensive development of students, cultivate their independent learning ability, innovative thinking ability, teamwork ability and other comprehensive qualities, and lay a solid foundation for their future development [16].

5. Conclusion

The optimization of the education management system of online education is the key to improving the quality of online education. Through the strategies of diversifying teaching

methods, improving the service ability of teaching platform, optimizing teaching content and strengthening the synergy of participating subjects, and combining with specific case studies, it can provide useful reference for the development of online education. In the future, online education should continue to explore and innovate to provide students with more quality education services.

Online education plays an increasingly important role in modern education, however, there are still some problems in the current online education in terms of education mechanism, such as a single teaching method, the need to improve the comprehensive service capacity of the teaching platform, the existence of many problems in the teaching content and the lack of synergy of the participating subjects. In order to solve these problems, this paper proposes a series of optimization strategies, including diversification of teaching methods, improving the service capacity of teaching platform, optimizing teaching content and strengthening the synergy of participating subjects. The implementation of these strategies can improve the educational quality and effect of online education and provide students with more quality educational services.

In the future, online education should continue to explore and innovate to further optimize the education mechanism. In terms of teaching methods, it can continue to explore more diversified teaching methods to meet the learning needs and interests of different students. In terms of the service capacity of the teaching platform, it can continue to optimize the interface design, increase interactive elements, provide personalized recommendations for learning resources, and improve the user experience. In terms of teaching content, the precise design of teaching content can be strengthened, standardized management and regular updating to improve the teaching effect. In terms of the synergy of participating subjects, the synergy between education departments, teachers, parents and students can be further strengthened to improve the effectiveness of online teaching.

In conclusion, the optimization of the education management system of online education is a long-term process of continuous exploration and innovation. Through the implementation of strategies such as diversification of teaching methods, enhancement of the service capacity of teaching platforms, optimization of teaching content and strengthening of the synergy of participating subjects, it can provide a useful reference for the development of online education and provide students with better quality education services.

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