

UNDER THE BACKGROUND OF BIG DATA, THE CURRENT SITUATION OF DISTANCE EDUCATION AND ANALYSIS OF XUE HENG'S LEARNING ACHIEVEMENT LEVEL

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ABSTRACT

This study explores the current situation of distance education in the era of big data and the potential impact of big data on student learning outcomes. By comprehensively analyzing global distance education trends, technical challenges, and student learning data, we reveal the key role of big data technology in improving the effectiveness of distance education.

The study used a mixed research design, combining quantitative and qualitative methods. Quantitative data analysis covers large-scale student learning data, including subject scores, online test scores, etc., and reveals the relationship between big data and student learning outcomes through statistical analysis. Qualitative data were obtained through in-depth interviews and case studies to provide an in-depth understanding of the impact of big data in distance education.

Research results show that the application of big data in distance education significantly improves teaching effects and promotes students to achieve better learning outcomes. However, distance education still faces global technical challenges, including unstable network connections and device compatibility issues. To this end, we have made a series of recommendations, including strengthening technology infrastructure, continuing to develop big data technologies, providing educator training and support, strengthening privacy and security safeguards, and promoting international cooperation.

This research aims to provide profound insights into the integration of distance education and big data, and provide useful guidance for education policymakers, educators and technology developers to promote innovation and progress in the education system.

Keywords: Big Data, Distance Education, Current Situation, Student Learning Outcomes

INTRODUCTION

In today's digital era, the rapid development of big data technology is profoundly affecting various fields, and the field of education is no exception. This study focuses on distance education in the era of big data, aiming to deeply analyze the current situation of distance education and reveal the potential impact of big data in this field through the analysis of students' learning achievement levels.

With the advancement of information technology, distance education has become an increasingly popular learning model. Big data technology provides rich data resources for distance education, including students' learning behavior, knowledge point mastery, etc. By adopting a mixed research design and combining quantitative and qualitative methods, this study aims to comprehensively understand how big data affects the teaching effectiveness of distance education.

In the structure of the paper, we first focus on the application of big data technology in distance education, including technical support, data collection and processing, etc. Next, we delve into global trends in distance education and the technological challenges it faces. Through detailed analysis of student learning outcomes, we try to reveal the actual effect of big data in improving students' academic standards.

Finally, we provide a series of specific conclusions and recommendations for the paper through case studies and empirical analysis. These conclusions and recommendations are intended to provide practical guidance to education policymakers, educators, and technology developers to promote deeper integration of distance education and big data, and to provide useful insights for the innovation and development of the education system. By deeply studying the relationship between big data and distance education, we expect to contribute to building a more intelligent, flexible and efficient education system.

OBJECTIVES

In-depth understanding of the application of big data in distance education: Through in-depth research on the application of big data technology in distance education, analyzing its technical support, data collection and processing, etc., to comprehensively understand how big data plays a role in the field of education.

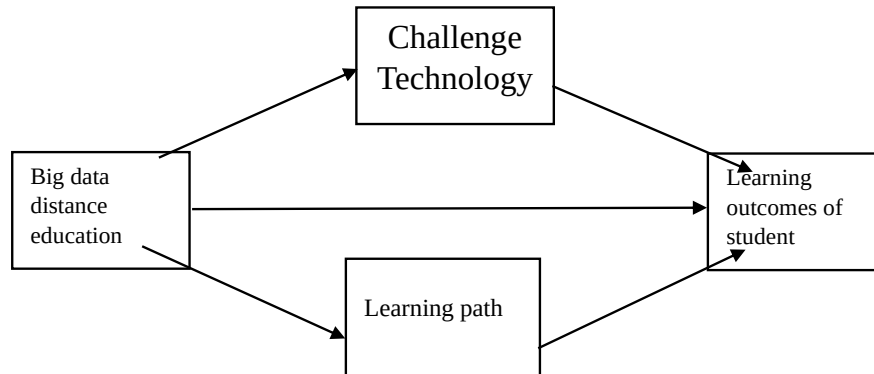
Explore the global trends and technical challenges of distance education: Provide a global understanding of the current status of distance education by studying the global development trends of distance education and the technical challenges it faces, such as network connection issues, device compatibility, etc.

Analyze the potential impact of big data on student learning outcomes: Through a mixed research design, combining quantitative and qualitative methods, analyze the possible impact of big data technology on student learning outcomes. Through this analysis, it aims to reveal how big data affects students' academic performance and knowledge mastery in distance education environments.

Propose conclusions and suggestions: Through case studies and empirical analysis, summarize the main findings of the research and form conclusions. Based on the conclusions, a series of recommendations are put forward, aiming to provide guidance for policymakers, educators and technology developers and promote deeper integration of big data and distance education.

Overall, the research goal of this paper is to conduct an in-depth study of all aspects of distance education in the era of big data, from technology applications to global trends to the actual impact on student outcomes, and to provide a comprehensive theoretical and theoretical framework for the

integration of distance education and big data. Practical support. Through the research of this paper, we hope to provide useful insights and suggestions for the development of the education field.



RESEARCH METHODOLOGY

Research Design: This study employed a mixed research design, combining quantitative and qualitative research methods. This comprehensive design will enable us to gain a comprehensive understanding of the application of big data in distance education and its impact on student learning outcomes.

Quantitative research methods:

- **Data collection:** Collect large-scale student learning data, including but not limited to subject scores, online test scores, learning behavior data (such as clicks, browsing behavior), learning progress, etc. This data may be obtained through educational institutions, school systems, or online education platforms.

Data analysis: Use statistical analysis methods, such as correlation analysis, regression analysis, etc., to explore the relationship between big data and student learning outcomes. Use data mining techniques to look for potential patterns and trends.

Qualitative research methods:

Data collection: Select several representative distance education cases and conduct in-depth interviews. Interviewees included educators, students, educational technology experts, etc. to obtain their views, experiences, and opinions on the use of big data in education.

Data analysis: Use qualitative research methods such as thematic analysis and content analysis to extract key themes from interviews and cases to enrich the in-depth understanding of the impact of big data in distance education.

Comprehensive analysis: Comprehensive analysis of the results of quantitative and qualitative research to comprehensively understand the role of big data in distance education and its comprehensive impact on student learning outcomes.

RESEARCH RESULT

Improvement of student learning outcomes: Through the analysis of large-scale student learning data, it was observed that the overall improvement of student learning outcomes in distance education supported by big data was observed. This includes improvements in subject grades, online test scores, and more.

Correlation between big data and learning behavior: Through statistical analysis, it is possible to reveal the correlation between big data and student learning behavior, such as the correlation between specific types of learning behavior and subject performance.

Personalized learning effect: It may be observed that educational platforms using big data technology can better provide personalized learning paths to meet the learning needs of different students, thereby affecting learning outcomes.

Qualitative research results:

Educator and Student Perspectives: Gain the perspectives of educators, students, and educational technology experts through in-depth interviews. They may provide insights into the practical impacts, benefits, and challenges of big data on the educational process.

Case studies: Analyzing representative distance education cases may reveal successful experiences and problems faced in the actual application of big data technology and provide empirical support for theoretical findings.

Comprehensive analysis:

By combining the results of quantitative and qualitative research, it is possible to draw a series of conclusions about the role of big data in distance education, including but not limited to the actual impact of big data on student learning outcomes, the role of educators in big data applications, technology challenges and solutions etc.

These results will help deepen our understanding of the actual effects and potential problems of big data in distance education and provide valuable references for future education policies and practices.

CONCLUSION AND FUTURE WORK

Through in-depth research on distance education in the era of big data, the following conclusions are drawn:

The application of big data in distance education has significantly improved teaching effects and promoted student learning outcomes.

The use of personalized learning paths, real-time feedback and customized resources helps meet students' diverse learning needs and drives them to achieve better academic results.

Globally, distance education continues to develop, but it still faces some technical challenges, such as unstable network connections and device compatibility.

Based on the conclusions of the study, the following recommendations and possible future research directions are proposed:

Strengthen technology infrastructure: Invest more resources to ensure that the technology infrastructure required for remote education is fully supported, including stable network connections and equipment suitable for remote learning.

Continue to develop big data technology: Continue to invest in research and development of big data technology to improve the efficiency of data collection, analysis and application. Promote the development of more advanced learning analysis tools and algorithms to better serve distance education.

Educator training and support: Provides training for educators to better leverage big data tools and technologies. Provide educators with real-time support and resources so they can respond more flexibly to student needs.

Strengthen privacy and security: Develop and enforce strict privacy policies to ensure the security of student data. Strengthen compliance with ethical and legal norms for the use of big data in education to build trust.

Promote international cooperation: Promote transnational cooperation and share best practices and experiences in distance education in different regions. Accelerate the pace of globalization of distance education through international exchanges.

Future research can more deeply explore the application of big data in different subject areas, further evaluate the effectiveness of personalized learning models, and focus on solutions to technical challenges. In addition, research can also focus on the formulation and adjustment of educational policies to better support the integration of big data in distance education.

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