

Research on adolescent education in the era of big data

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Abstract: The era of big data has had an immeasurable impact on human life, influencing the perspectives and approaches to issues. From the perspective of adolescent education, the big data era has introduced new contradictions, challenges, and opportunities in terms of educational content, methods, decision-making, and assessment. In the big data era, it is necessary to transform the way adolescents receive education, keep up with new ideas and methods, emphasize classic theories and approaches; improve educational methods, focus on the cultivation of values; and make rational use of big data for educational decision-making and assessment.

Keywords: Big Data Era, Adolescent Education, Impact, Strategies

1. Introduction

Big data can be traced back to the twentieth century, when the renowned futurist Alvin Toffler made astonishing predictions about vast amounts of data, unstructured data, and information channels in his 1970 book "Future Shock," but at that time, big data was only applied in a small range within specific industries. On September 4, 2008, the journal Nature published a special issue titled "Big Data," which first introduced the concept of big data, and since then, the concept of big data has truly taken off [1-2]. The rise of the big data era has enriched the ways in which we understand the world, not only significantly impacting people's daily lives but also bringing about tremendous changes to educational information and resources. These changes have generated new issues and posed new challenges in various aspects of adolescent education, including educational content, methods, decision-making, and assessment.

2. The changes brought to adolescent education by the big data era

Big data has a positive promotional effect on the development of education, influencing the development of education from three levels: conceptual thinking, industry development, and integrated innovation, achieving the integration, noise reduction, multiplication, and breakthrough effects of education, and playing a crucial role in solving educational problems. Among them, the impact on adolescent education is mainly manifested in the following aspects.

2.1. In terms of educational content

2.1.1. Educational resources are becoming increasingly diversified

The era of big data has brought us an enormous amount of data, which appears in the learning and life of learners at an explosive rate. This not only greatly affects the knowledge choices of learners but also has a certain impact on the educational guiding ideologies of different countries and regions. The contradictions between pluralistic educational resources and different educational guiding ideologies are mainly manifested in the following two aspects:

First, educational resources in different countries and regions have their own ideological attributes. Adolescents are in a critical period for the formation and development of their worldview, outlook on life, and values, facing educational resources from different ideologies. In terms of knowledge selection, adolescents will face certain difficulties. Therefore, educators must assess the situation and provide help and guidance for adolescents to reasonably select knowledge from pluralistic educational resources.

Second, the guiding principles of education require that adolescents' learning of knowledge should have a certain guiding system, such as which subjects to study and for how long. This specialized educational requirement creates a contradiction with the diversity of educational resources in the era of big data. In the vast array of pluralistic educational resources, it is sometimes difficult for adolescents and educators to make reasonable choices.

2.1.2. The speed of information updates is continuously accelerating

The era of big data not only generates an enormous amount of data but also accelerates the speed of information sharing. Learning resources and content can quickly become outdated, leading to a contradiction between the accelerated pace of information updates and the stability of learning content. This contradiction is mainly manifested in the following two aspects:

First, the big data era produces a massive amount of data, and educators cannot keep up with the rapid transmission of various new technologies and knowledge to students in a short time.

Second, although the speed of information updates is continuously increasing, "new does not necessarily mean good." This requires educators to assess the situation accurately, grasp the basic laws of education, and integrate new knowledge, new perspectives, and new content when teaching important subjects, theories, and viewpoints.

2.1.3. Educational resources are gradually becoming richer

The era of big data has enriched our educational and living resources. At the same time, the choice of more meaningful and valuable resources from the multitude of options has become a noteworthy contradiction and issue [5]. Thanks to the development of information technology, we can quickly access information from different countries and regions, across various fields, in a short period. However, everyone's time is limited, and it is not possible to master all the newly emerging knowledge within a limited timeframe, leading to the contradiction between the richness of educational resources and the finiteness of learning time. On one hand, adolescents need to grasp the theoretical achievements and knowledge that have made significant contributions to humanity. These are the main threads that help adolescents build their values, relate to the inheritance of human culture and knowledge, and form the basis for our continued exploration of knowledge and truth. On the other hand, educators must pay attention to the application of educational principles. What knowledge should adolescents learn, what should they not learn, and how long should each subject be studied are all issues that require careful investigation.

2.2. In terms of educational methods

2.2.1. Teaching methods urgently need reform

The arrival of the big data era has brought about a series of changes in educational content, which in turn has influenced the transformation of teaching methods. The injection method has long been one of the widely used educational approaches in China, playing a significant role in the transmission of knowledge. However, with the advent of the big data era, the injection method is no longer suitable for contemporary education. Firstly, the injection method finds it difficult to impart a vast amount of information resources to students; secondly, relying solely on the injection method, even if all new knowledge and perspectives can be taught to students, will lead to students facing the problem of not knowing how to choose [6]. Therefore, in the big data era, there is an urgent need to transform educational philosophies and reform teaching and learning methods. Among these, the innovation of teaching methods is crucial, as it plays a significant role in students' understanding and mastery of knowledge, the formation of knowledge systems, and their healthy growth.

2.2.2. The teaching philosophy is in urgent need of transformation

With the continuous improvement of living standards, people's spiritual lives have undergone certain changes, and the utilitarian creed of "what is useful is good" has spread widely in society, posing a certain challenge to our educational methods.

Education must follow its inherent laws. Educators should not only teach students the so-called "useful" knowledge but also convey values such as truth, goodness, and beauty, as well as theories and

methods that have had a significant impact on human society. This is the foundation for transmitting and developing knowledge. If we approach learning solely with a practical attitude, the significance of education will be greatly diminished.

2.2.3. Teaching methods urgently need to be improved

In the era of big data, whether it is teachers, students, or ordinary people, everyone can access sufficient educational information resources, which changes the previous situation where a few people monopolized knowledge and books. The traditional teaching and learning method of lectures is facing challenges. Therefore, teachers need to continuously improve in terms of teaching methods, teaching philosophies, and teaching tools.

Lecture-based learning largely ensures the accuracy of information transmission, while cooperative learning is a process of mutual debate and selection. Essentially, lecture-based learning is an education method where the teacher is the main figure and the student is the auxiliary, whereas cooperative learning highlights the equal relationship between students and between students and teachers, each having its own advantages and disadvantages. However, for adolescents, cooperative learning is more in line with the principles of quality education and is more likely to be widely accepted.

2.3. Educational decision-making and assessment

2.3.1. Traditional educational patterns are being challenged

Another significant impact brought by big data is that people no longer make decisions solely under the control of empiricism and rational debate. They can see the history and trends of things from intuitive data, grasp the direction of development, making decisions more reliable for high-probability events [7]. This "democratization" of educational decision-making is a huge challenge for teaching students according to their aptitude, and we should fully recognize the advantages and disadvantages of this challenge. On the positive side, people can grasp high-probability events of things more accurately and provide more reasonable explanations for educational decision-making behaviors. On the negative side, this new way of educational decision-making sometimes lacks analysis of the particularities of real conditions. This "democratization" of educational decision-making is a huge challenge for teaching students according to their aptitude. However, data-driven decision-making is merely a choice where the interests of the majority outweigh those of the minority, which is unfair to the minority and to the diverse characteristics of the majority of learners [8]. If education relies solely on data for decision-making, it can lead to decisions that adversely affect the development of some students.

2.3.2. Educational decision-making methods need transformation

Educational decision-making based on big data is largely an average or a trend. However, things cannot be simply averaged and the objectivity of the subjects related to the decision must be taken into account. Therefore, when educational decision-making departments apply big data to make an educational decision, we can only see a trend, conclusion, or overall approach, and it is difficult to see the particularities associated with different groups, which poses a serious threat to individual freedom.

2.3.3. Educational assessment methods need innovation

Educational assessment is a comparative process that should take into account the comparability of the subjects being compared. If the particularities of education are not considered, it can lead to serious bias. When assessing the educational levels of Shanghai and a less economically developed city, if we do not take into account the special circumstances of a particular region and simply conclude that Shanghai's education policies are better and that the government places more emphasis on education based on the assessment results, such a conclusion would be unreasonable and meaningless. At the same time, in our current assessments, there is often an overemphasis on quantitative factors such as the number of outstanding teachers, talent cultivation, and research papers, while quality factors are neglected. This also indicates that the current methods of educational assessment are outdated.

3. Strategies for youth education in the era of big data

3.1. Embrace new ideas and methods, yet cherish classical theories

As educators, it is essential to continuously enhance one's own learning, develop the ability to extract useful information from vast data, keep up with new ideas and methods, and strengthen one's knowledge, capabilities, and literacy. At the same time, we must continuously improve our learning abilities, master and effectively apply advanced educational content from both domestic and international sources, thereby laying a solid foundation for adolescents to develop a good international perspective.

The study of classical theories and methods is fundamental to ensuring the transmission, sharing, and development of human knowledge, and it plays a crucial role in the formation and development of our worldview, outlook on life, and values. It provides us with a good measure and method for understanding the world, helping us to discern knowledge at different levels and hierarchies, and plays a very important guiding role in our correct understanding of the universe and humanity itself [9]. Therefore, educators should focus on grasping classical theories and methods in the education of adolescents, promoting their learning of these theories and methods in the era of big data.

3.2. Improve educational methods and focus on the cultivation of values

In the era of big data, educators cannot rely solely on the lecture-based teaching method; they should also strive to try different educational approaches and continuously promote the construction of a resource library for the personalized development of students, providing guidance and assistance for the development of each student.

In an era where choices and temptations are constantly increasing, how to better cultivate the values of adolescents is a very important issue. Traditional value cultivation mainly relies on instilling education, which fails to make students genuinely accept certain values from the heart. Therefore, educators in the big data era should actively innovate educational methods and means, pay attention to educational skills, and ensure that value cultivation is effectively implemented.

3.3. Make rational use of big data for educational decision-making and assessment

In the era of big data, the vast amount of information provides us with incredibly rich educational resources, from which we can find directions for educational decision-making and reform. At the same time, we should also be aware of the problems and risks associated with using big data for educational decision-making and assessment. On the one hand, we need to actively improve our ability to discern, so that when faced with a multitude of information resources, we can prioritize and distinguish between truth and falsehood. On the other hand, we must analyze specific issues in detail, delve into the practical aspects when making educational decisions, and combine existing data to make rational decisions, better serving the development of youth education.

4. Conclusion

It is necessary to view the impact of big data on youth education rationally. On one hand, the era of big data has indeed brought certain shocks to youth education in terms of epistemology and methodology, promoting the transformation and development of educational methods. On the other hand, the intrinsic value of education in ontology remains the core and foundation that guides our educational practices; the cultivation of learning emotions, interests, and concepts should not be abandoned with the changes of the times. The impact of the big data era on youth education should neither be overhyped nor ignored. We must seek solutions from education and social development, and continue to focus on the inherent value of education and its transformation and development.

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