Research on the Value of Inclusive Education Based on Big Data in Promoting the Development of Minority Education

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Abstract. Compulsory education for ethnic minorities is a weak link in China's education system, which is mainly reflected in the unfair phenomena in educational opportunities, educational process and educational results. Inclusive education for ethnic minorities in the context of big data refers to the activities to promote the socialization of ethnic minority students in China by means of technological gifts in the era of big data for ethnic minorities whose population is relatively weak. As the largest developing country, promoting inclusive education in China is still the most basic task of the country, and the government will undoubtedly bear the most important responsibility in promoting inclusive education. The content of inclusive education is more and more broad, far beyond the scope of special education, involving all kinds of learning difficulties and students with special needs. In modern China, which has increasingly frequent international contacts, we need to re-examine China's current education from the perspective of inclusive education based on the background of big data.

1. Introduction

With the development of data mining, storage and analysis and network technology, data can reflect people's emotion, behavior and thinking more accurately, multi-dimensionally and timely, thus providing a realistic possibility for human to use data collection and analysis [1]. Relying on and attaching importance to big data has become one of the important factors to realize our country's strategic goal of becoming a powerful nation. In order to carry out better education and teaching, we must recognize the nature and characteristics of minority education and combine modern information technology with new educational concepts. As education, especially inclusive education for ethnic minorities, the advent of the big data era must not be turned a blind eye. Instead, we should respond positively to meet new opportunities and challenges [3]. Inclusive education refers to an education that provides equal and effective opportunities for students to receive education and provides full help and support to all students in nearby schools in order to train students to become full members of society to face future life. Inclusive education originates from special education. The development of special education has gone through several stages, namely from independent setting to integration with mainstream general education and then to inclusive change [4]. The concept of human rights, democracy, and equality of this education reflects the humanistic care in the field of education in many aspects. The lack of changes in the education system has become an important obstacle to the implementation of inclusive education. Schools need reform, ideas need to be updated, and pedagogy needs to be improved.
In some cases, special education exists as a supplement to general education, but in most cases it is completely independent. The education system needs to explore different ways to meet the needs of children with disabilities, and requires that all students with disabilities be accepted in various ways, which has led to the concept of inclusive education [5]. The content of inclusive education is getting wider and wider, far beyond the scope of special education, involving students with various learning difficulties and special needs [6]. Inclusive thinking has been given a broader meaning, far beyond the mere disabled and those with learning difficulties [7]. The main challenge encountered in the combination of special education and general education is the organization of ordinary schools. Its curriculum, teaching and learning strategies have not changed and it is difficult to meet the diverse special needs of students [8]. As society develops toward democratization, education must be democratized. Inclusive education is the concrete manifestation of this democratization of education [9]. Inclusion and participation are the foundation of human dignity and enjoyment, and a concrete manifestation of respect for human rights. This is reflected in the field of education, which is a strategic idea of promoting and seeking true equality of educational opportunities. In modern China with increasingly frequent international contacts, it is necessary to re-examine China's current education from the perspective of inclusive education based on the background of big data.

2. The Relative Independence of Minority Education

As a subsystem of society, education is inevitably subject to the influence of other social environments. Theoretically, the cross-influence of education and the big data era is inevitable. When considering the concept of inclusion, we should not forget that it originates from the perspective of meeting special needs, but also should pay attention to disabled children as the largest group of children outside school. Inclusive thought has entered the field of general education and attracted the attention of many countries in the world. Under the influence of this idea, a series of reforms have been carried out in the system, curriculum and teaching methods of general education in various countries. Inclusive education for ethnic minorities, as a part of the overall composition of education, not only contains the general features of education, but also has the particularity directed at this special group of ethnic minorities. Minority education should be carried out in combination with the characteristics of minorities, rather than teaching minority students to learn. Inclusive education involves the long-term national education policy and is closely related to other national social policies [11]. Although it is difficult to distinguish between the groups that are still excluded and the political troubles that may be caused by admitting the existence of excluded groups, the state must fully assume the responsibility of inclusive education.

In the process of learning, the scientific value and humanistic value of big data technology will be further reflected. In fact, every student has very different and different potentials in different fields. They have completely different internal needs in learning methods and approaches. The emergence of mobile big data has greatly improved the information communication between students and teachers, both in terms of quantity and in terms of the atmosphere of equal communication. Fig. 1 is the most important communication method statistics between students and educators.

![Fig. 1 The main communication methods between students and educators](image-url)
When carrying out innovative reforms in teaching, educators must raise their own awareness of practical teaching, so that they can effectively combine theory with practice in the teaching process. Inclusive education is a learning method that can adapt to and meet the different learning needs of different learners, and can improve the quality and efficiency of learners. After each parameter adjustment, the data flow quickly reaches a steady state. The initial rotation is too large and may cause excessive data flow. Perform three sets of data tests and statistical results, as shown in Fig. 2.

![Fig. 2 Data impact over time](image)

Inclusive education originated from the field of special education and immediately affected the whole education system. The human rights view, educational democracy view and educational equality view embodied in inclusive education are special education fields. On the basis of general educational characteristics, minority education has its own characteristics, which are mainly manifested in educational nature, training objectives and educational objects. Inclusive education puts forward the idea of carrying out a comprehensive reform of general education, and puts forward two principles of reforming general education, namely equality and diversity.

In the nature of education, it has a national character. In a series of educational activities such as educational policy, development planning and curriculum arrangement, it has always reflected China's excellent national tradition and national spiritual characteristics [12]. Big data analysis can make minority education policy from subjective experience to objective and convincing. Compulsory education in ethnic minority areas is a weak link in China's education system. Inclusive education provides a new way for Chinese scholars. In our country's basic education, there are still many undemocratic or unrecognized undemocratic situations, which are contrary to the idea of inclusive education. The concept of inclusive education has gradually expanded from the field of special education to the field of general education. Inclusive education mainly focuses on the education of vulnerable groups, which is a personalized education to ensure their integration into the mainstream society and avoid exclusion.

3. The Changing Trend of Inclusive Education for Ethnic Minorities in the Age of Big Data

3.1 Scientificity of Students' Individualized Development

In a multi-ethnic country, although ethnic minorities are at a disadvantage in population, the specific culture they produce is an indispensable part of Chinese traditional culture. Big data analysis realizes diversified education and precise personalized education for ethnic students, thus truly realizing multicultural education. When students enter the society after graduation, they will not be rejected by the society, but will smoothly integrate into the mainstream of society. The sharing of big data is characterized by strong public participation and independent choice. Fully respecting the individual
independent personality and independent choice of the educated has effectively promoted the status of the educated. From the perspective of popularity rate, the popularity rate of Internet users among the population with college education or above has been leading, and has been close in the past two years. As shown in Fig. 3.

![Graph showing the popularity of Internet users at different levels of education](image)

**Fig. 3** Popularization of Internet users at different levels of education

Autonomous learning based on curriculum resources and collaborative learning mode based on teacher guidance can be applied to students’ course preview, assisted learning, review, and teacher-student network interaction. Online assignment systems and virtual experiment systems can be effective supplements to related teaching links. In the case of the similarity threshold of the SCA algorithm, the accuracy of the final similarity operation is still low. Table 1 is the average similarity of the four algorithms. Fig. 4 shows the accuracy rate under different thresholds of similarity.

| Threshold | 0.05 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 |
|-----------|------|-----|-----|-----|-----|-----|
| SCA | 0.635 | 0.758 | 0.587 | 0.591 | 0.623 | 0.635 |
| SOA | 0.591 | 0.524 | 0.872 | 0.855 | 0.876 | 0.813 |
| SLA | 0.583 | 0.512 | 0.514 | 0.524 | 0.589 | 0.593 |

![Accuracy at different similarity thresholds](image)

**Fig. 4** Accuracy at different similarity thresholds

Big data makes ethnic education-related data more diversified, multidimensional and multi-layered, so as to comprehensively and truly reflect the quality of education. Educators find out the advantages and disadvantages of national students’ learning from the feedback data, so as to adjust the teaching
content, progress, methods and teaching materials [13]. The inheritance of the traditional culture of ethnic minorities depends not only on the traditional word of mouth, but also, more realistically, on the all-inclusive education and, more precisely, on the development and implementation of school-based curriculum to a large extent. Big data not only collects data about one dimension of students' learning, but also can pay attention to students' health data, psychological data, social communication data and aesthetic data. The demonstration of the uniqueness of the school finally depends on the development of the students. Only when the students have a comprehensive understanding of the whole and the individual can the school-based curriculum be developed.

3.2 Educational Ideas Embodied in Inclusive Education

From the technical and thinking levels, big data can also help promote the educational concept of teaching students in accordance with their aptitude. The data obtained from traditional inclusive education for ethnic minorities mainly come from classroom, students' answering questions and periodic academic testing activities. Big data analysis puts forward new requirements for educators, that is, ethnic educators need not only professional knowledge, but also the ability to master big data analysis. Democratization of education means that students enjoy more and more opportunities to receive education. The democratic education system and cooperative education form are constantly evolving towards openness and pluralism. Different from the single language teaching in Han schools, the special feature of minority schools is their bilingual language environment. Inclusive education reflects humanistic care in various fields of education. The human rights, democracy and equality concepts in this concept complement each other [14]. Under the current trend of multicultural education and educational democratization, the concept of inclusive education is the inevitable result of the pursuit of educational equity and educational democracy. Language is an important position for ethnic minority language learning and communication, and ethnic minority schools must assume certain social responsibility, which is determined by the social function of education. If network education is introduced into ethnic minority education, and ethnic minority students are fully given autonomy and selectivity in learning, students can choose corresponding courses according to their learning ability and foundation.

4. Summary

In order to promote the equality of educational results in ethnic minority areas, we must first improve the comprehensive quality and ability of ethnic minority students. Ordinary schools should gradually face all students and provide education suitable for their development requirements for all kinds of students. Naturally, the requirements for teachers' quality will be higher and higher. The key to improve the quality and ability of students is that teachers should treat each student equally, care for each student equally, and use the development perspective and multiple perspectives to evaluate and encourage each student. For the value, significance and educational activities of national education, we can not be reduced to slaves of big data. However, for the policy, planning, curriculum development and learning effect evaluation of ethnic inclusive education, it is relatively effective to use big data technology to predict. We should strengthen teachers' continuing education and training, continuously improve teachers' quality, enable teachers to understand the characteristics of all kinds of students, and obtain methods of making individual education plans and teaching students according to their aptitude. Big data technology mines and analyzes students' learning data, and constructs a learning system to meet the needs of ethnic minority students' personalized development, so as to promote them to better carry out personalized "self-organizing learning". The inclusive education of ethnic minorities should avoid complete data, and the data generated in teaching activities cannot replace the dialogue and communication between teachers and students as human beings.

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