

An Analysis of the Inequality and Countermeasures of Health care and Education Under the Development of Science and Technology

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Abstract. Significant advances have been made in healthcare and education due to rapid advances in technology, but these advances have not been equally accessible to everyone and have exacerbated social inequalities. The purpose of this paper is to analyze the inequalities caused by the development of technology in the fields of health care and education and to discuss the corresponding countermeasures. Through literature review, data analysis, and case studies, this paper proposes a series of policy recommendations and technical improvements aimed at closing the inequality gap. The inequality in the field of health care and education, the development of science and technology has promoted the progress of health care and education but also brought about the problem of inequality. It is necessary to work together through the government, society, technology, and other aspects to effectively address these challenges, achieve equitable development of health care and education, and propose corresponding response strategies. Highlights include an analysis of inequalities in health and education, such as significant barriers to access to advanced medical technologies and services for vulnerable groups such as the poor and older people. In terms of coping strategies, government should increase government investment in medical resources, improve the medical security system, promote the balanced distribution of medical resources, and improve the quality of medical services. At the same time, government should narrow the digital divide and build online teaching so that people in areas with underdeveloped science and technology can receive better education and improve the quality of teaching.

Keywords: Technological Developments, Inequality, Online Measures, Digital Divide.

1. Introduction

1.1. Research Background

As an important force for social progress, technology plays a vital role in the fields of health care and education. However, the dividends brought about by scientific and technological progress have not been evenly distributed but have exacerbated social inequality to a certain extent. In the healthcare sector, high healthcare costs and high-tech equipment limit access to healthcare for low-income populations. In the field of education, the digitization and intellectualization of educational resources have also led to differences in educational opportunities between urban and rural areas and between rich and poor.

As one of the core fields of modern science and technology, information technology has developed rapidly and has a wide range of influence. In recent decades, every breakthrough in information technology, from computer technology and Internet technology to mobile communication technology, has greatly changed the way of life and work mode of human beings. Especially in recent years, the rise of artificial intelligence and other technologies has pushed information technology to a new height. With the rise of new ways of working and learning, such as remote work and online education, people's lifestyles and work patterns have changed profoundly. At the same time, the development of science and technology has also brought some new social problems, such as inequality in the medical field, disparities in access to technology, and uneven redistribution of medical resources. In addition, in the field of re-education, there will also be a series of problems, such as the lack of Internet affecting students' learning and the inequality of skills and employment.

1.2. Literature Review

Fang proposed that whether it's the digital divide or the monopoly of giants, the inspiration from it is similar: the Internet is not a force that exists in a vacuum, and social realities profoundly influence its development. Without greater efforts for educational equality, and if society fails to enable children from low-income families to learn to make better use of digital media instead of indulging in it, the Internet alone will not close the information gap between the rich and the poor [1].

Zheng analyzed that digital transformation has brought forth numerous challenges and opportunities within the realm of education. Comprehensive analysis impacts digital transformation on educational equity, with a particular focus on two critical dimensions: resource allocation and technological integration [2].

David proposed that the anger of people in northern California and elsewhere in the United States stems from the increasingly harsh fact that the rich are getting richer while many others are struggling. Technology is advancing at an indisputably faster pace than anywhere else in the world [3].

Most of the scholars/articles mainly study how the development of science and technology can lead to the common progress of the world in the future, and few scholars or researchers will analyze the imbalance in the development of the world brought about by the development of science and technology. Technology acceptance and capacity also differ, with different groups varying in their ability to adapt and accept new technologies, and many marginalized groups may not be able to use new technologies effectively, leading to further fragmentation in education and health services. For example, there are fears that jobs are disappearing as more and more economic activity is automated, and social media is fueling divisions, anxieties, and doubts.

1.3. Research Framework

First, this study will briefly describe the rapid development of science and technology, emphasizing its central role in driving global economic, social, and cultural change. The positive impact of scientific and technological development on world development, including an analysis of how scientific and technological progress contributes to economic growth, the contribution of science and technology is try to improve the quality of human life and the role of science and technology in promoting social progress and cultural exchange.

Secondly, it puts forward the global issue of world development inequality, pointing out that although scientific and technological progress has brought unprecedented opportunities, it has also exacerbated the development gap between countries, regions, and even individuals. It is pointed out that there is a huge gap between developed and developing countries in terms of access to scientific and technological resources, cultivation of innovation capacity, and application and transformation of technology.

Finally, the purpose of this paper is to explore how the development of science and technology affects and exacerbates the world's development inequality and to seek possible mitigation strategies.

2. Case Description

Developed regions have more scientific and technological resources and infrastructure, while less developed regions often lack advanced technology and equipment, which leads to disparities in the quality of medical services and education [4]. For example, in the Internet and information technology, the degree of penetration of this electronic information is different, and there are obvious differences in the ability to access information between rural and urban, developed and developing countries.

Economically developed regions such as Northern Europe, North America, and Oceania have the strongest medical capacity, followed by Latin America, Eastern Europe, the Arab region, and East Asia, including China, and the countries at the end of the medical quality level are mainly distributed in Africa, Southeast Asia, and South Asia [5]. The education sector also faces challenges. The popularity of online education platforms has made knowledge acquisition more flexible and diverse, but problems such as uneven network coverage and lack of equipment have limited the learning

opportunities of children from rural and low-income families, forming a "digital divide". In addition, the application of intelligent education tools has also intensified the tilt of educational resources to key schools and urban schools, further widening the gap in education quality between urban and rural areas and between schools.

Current research and countermeasures to address these inequalities are gradually deepening. The government and all sectors of society are committed to increasing investment in remote areas and vulnerable groups and promoting the balanced distribution of medical and educational resources through policy support, capital investment, talent training, and other measures. On the other hand, technological innovation is also seen as the key to breaking down inequality, such as the development of medical equipment and online education platforms suitable for different economic conditions and the use of big data, artificial intelligence, and other technologies to optimize resource allocation and improve service efficiency and fairness.

3. Analysis of the Problem

3.1. Influence Identified of Impact of Technological Development on Inequality in the Healthcare Sector

3.1.1 The different levels of scientific and technological development in regions

First of all, it led to an uneven distribution of educational resources. In areas with advanced technology, schools can provide students with a more personalized and efficient learning experience with the help of advanced information technology, intelligent teaching equipment, and rich online education resources [6]. This not only broadens students' knowledge horizons but also promotes the innovation and transformation of the education model. In contrast, in areas with relatively backward technology, educational resources are scarce and traditional, and it is difficult for students to enjoy the same quality of educational services, further exacerbating the education gap.

Second, differences in scientific and technological development also affect access to educational resources. In technologically advanced regions, students can easily access high-quality courses at home and abroad, participate in online seminars, and even interact with scholars from all over the world through the Internet, greatly broadening their learning channels. Students in technologically backward areas may be limited by problems such as insufficient network infrastructure and the digital divide, making it difficult to access these valuable educational resources and limiting their learning and development.

3.1.2 Educational dilemma: emerging technologies deepen the urban-rural and socioeconomic divide

The education sector faces a similar dilemma. Emerging education models, such as online education and AI-assisted teaching, provide more flexible and diverse ways to learn, but they also invisibly widen the educational gap between urban and rural areas, as well as rich and poor students [7]. In areas where there is a lack of network coverage and high-quality educational resources, it is difficult for students to access the latest learning tools and high-quality teaching content, limiting their knowledge horizons and future development potential.

3.1.3 Global health inequality: The impact of uneven technological development on medical resource distribution

The uneven development of science and technology has led to the uneven distribution of medical resources. With their strong economic strength and technological advantages, developed countries have achieved remarkable results in the fields of high-end medical equipment, biotechnology, and telemedicine. These advanced medical resources not only provide high-quality medical services for their own people but also benefit developing countries through international cooperation and assistance [8]. In contrast, many developing countries are unable to enjoy these advanced medical

resources due to economic conditions and technological limitations. This uneven distribution of medical resources exacerbates the inequality in global medical development.

In addition, the gap in scientific and technological development has also led to differences in the efficiency of medical resource utilization. Developed countries have a more complete medical system and higher medical investment so that medical resources can be fully utilized. In developing countries, due to the shortage of medical resources and the low utilization efficiency, many patients cannot receive timely and effective treatment. This difference in the efficiency of medical resource utilization not only affects the quality and efficiency of medical services but also exacerbates the inequality of medical development.

3.2. Problem Identified Analysis

3.2.1 Differences in the quality of medical services

Countries vary widely in terms of the use of health services. In much of Asia, doctors are visited more often than in developing countries and around the world; India's visit rate is one-third higher than the global average. The African continent lags behind the rest of the world in terms of outpatient visits and inpatient admissions [9].

These differences are partly due to differences in doctors and hospital beds per capita, but this is only partly due. The depth of the problem goes beyond hiring doctors and building more hospitals. Africa's outpatient visit rate is lower than it should be for the number of doctors and hospital beds per 1,000 people, while India and Pakistan are very different. In Africa, the most serious constraint seems likely to be the absence of doctors, while the number one problem in South Asia appears to be the poor quality of the services actually provided.

3.2.2 Differences in the application of medical technology

In the case of limited resources, high-income areas or groups often have priority access to advanced medical equipment, technology, and high-quality medical services, while low-income areas and disadvantaged groups may face the dilemma of lack of medical resources, difficulty, and high cost of medical treatment [10].

Second, maintenance costs make it difficult to popularize advanced medical equipment and technology to primary medical institutions, and many patients are forced to travel long distances to large cities for medical treatment, which not only increases the financial burden but also delays the best time for treatment. This "technology divide" further widens the health gap between different social groups.

3.2.3 Uneven distribution of medical resources

The popularization of high-end medical technologies is often concentrated in economically developed areas with abundant medical resources, while remote and impoverished areas find it difficult to enjoy the benefits brought by these scientific and technological achievements. This regional inequality in the distribution of resources has led to significant disparities in the access and quality of medical care for patients, exacerbating health inequalities between urban and rural areas and regions.

4. Suggestions

4.1. Suggestion 1

First, the government should play a leading role in increasing investment in education, especially in technologically underdeveloped areas. Through the establishment of a special fund, the hardware facilities of schools, such as computers, multimedia equipment, and laboratory equipment, will be improved to improve the quality of education. The survey found that the education informatization projects promoted in backward areas are often only equipped with hardware equipment at one time in the early stage of construction, and the needs of daily operation, purchase of consumables,

maintenance, and update in the later stage are difficult to meet, and the gap of related supporting funds is large.

In addition, with the help of technologies such as the Internet, artificial intelligence, and big data, it is also one of the ways to break geographical restrictions and realize the sharing of high-quality educational resources. For example, the establishment of an online education platform and the integration of the world's best technology education courses can make these resources accessible to students in different regions at a lower cost.

Finally, international cooperation is also an important way to address this issue. By strengthening international educational exchanges and cooperation, people can jointly develop and promote advanced educational technologies and methods and realize the optimal allocation of educational resources. At the same time, government will actively introduce international high-end educational resources and innovate educational cooperation models to expand the supply of high-quality educational resources effectively.

4.2. Suggestion 2

The disparity in the quality of medical services and the inequality in health development caused by the unequal development of science and technology is a global problem, especially between developing and developed countries. This inequality not only exacerbates social inequality, but can also have a serious impact on people's lives and health. Therefore, it is particularly important to explore the solution.

First, it is necessary to narrow down the leading role that technology should play in health care. The government needs to increase investment in science and technology in medical institutions at the grassroots and remote levels and improve the capacity of medical services in these areas, especially for underdeveloped areas and people with low incomes. Through the formulation of preferential policies, the provision of financial subsidies, and other measures, medical institutions and enterprises can be encouraged to participate in the construction and allocation of medical resources. For example, by introducing advanced medical equipment and technology, government will improve the medical environment so that residents in these areas can also enjoy high-quality medical services. At the same time, the government should also formulate relevant policies to encourage innovative research and development of science and technology enterprises in the medical field, strengthen the supervision and implementation of medical policies, and promote the transformation and application of scientific and technological achievements to ensure the fair distribution and effective use of medical resources.

Secondly, strengthening the training and distribution of medical personnel is also the key. In view of the uneven distribution of medical talents, the government and education departments should increase investment in medical education at the grassroots and remote levels, cultivate more medical talents with professional quality and skills, and train and strengthen the professional ethics and sense of responsibility education of medical personnel through cross-regional and interdisciplinary medical talent training projects, so as to improve the quality and safety of medical services, which can have a certain alleviating effect on the uneven distribution of medical care caused by the unbalanced development of science and technology. At the same time, the quality of medical services should be improved by establishing reasonable incentive mechanisms, such as providing generous remuneration and development opportunities, to attract and retain these talents.

It is worth mentioning that with the rapid development of information technology, new service models such as telemedicine provide new possibilities to solve the problem of inequality in medical services. By making use of the Internet and mobile communication technology, people can enjoy high-quality medical resources and services across geographical restrictions, for example, the promotion of telemedicine technology: the use of the Internet and communication technology, the promotion of remote consultation, remote surgery, and other telemedicine technology, the extension of high-quality medical resources to remote areas and primary medical institutions. This can not only improve the accessibility of medical services but also effectively alleviate the problem of uneven distribution of medical resources, reduce medical costs, and reduce the financial burden of patients.

5. Conclusion

5.1. Key Findings

Through an in-depth analysis of the complex relationship between the development of science and technology and the inequality of medical care and education, this paper aims to propose a comprehensive set of coping strategies from the perspective of economics in order to provide theoretical support and practical guidance for promoting social equity and narrowing the development gap.

It includes an overview of the application of key technologies in healthcare, like precision medicine telemedicine. And education, such as MOOCs and intelligent teaching systems.

Examine inequalities in healthcare resources and explore disparities in access to high-tech medical devices and services and their impact on patient health outcomes, inequality of educational resources, and analysis of the digital divide in the popularization of online education, including regional and group differences in network access, device ownership, and teaching quality.

Among the solutions, it is recommended that the government formulate targeted policies, such as increasing investment in infrastructure in underdeveloped areas, providing financial subsidies, and supporting technology popularization and education: increasing digital skills education for the public, especially digital literacy training for remote areas and vulnerable groups, to reduce the digital divide.

In addition, this study will promote international cooperation and exchanges, strengthen international cooperation in the fields of medical care, education, science, and technology, and learn from advanced experience to jointly address the challenge of global inequality.

5.2. Research Significance

As an important force for social progress, technology plays a vital role in the fields of health care and education. However, the dividends brought about by scientific and technological progress have not been evenly distributed but have exacerbated social inequality to a certain extent. In the healthcare sector, high healthcare costs and high-tech equipment limit access to healthcare for low-income populations. In the field of education, the digitization and intellectualization of educational resources have also led to differences in educational opportunities between urban and rural areas and between rich and poor. Therefore, it is of great significance to explore the inequality caused by the development of science and technology and the strategies to deal with it.

A company can carry out technological innovation and application and use its own technological advantages to develop medical and education solutions suitable for remote areas, such as telemedicine, online education platforms, etc. At the same time, it can participate in or initiate public welfare projects to provide medical and educational assistance to poor areas and cooperate with local governments and non-governmental organizations to promote the balanced distribution of resources jointly. Promote the development of medical care and education in the company's strategy and achieve sustainable development through the fulfillment of social responsibility.

The application of the Internet and smart devices is supposed to promote the sharing of educational resources, but the digital divide between urban and rural areas and between schools is widening. Children from wealthy families have access to more high-quality educational resources, while low-income families have less access to them. In order to do this, the government and the education sector need to work together to increase investment in education, improve infrastructure in poor areas, and ensure that every child has equal access to educational resources. At the same time, it promotes online education, breaks geographical restrictions, and promotes educational equity. This will help cultivate more outstanding talents and promote the overall progress of society.

5.3. Limitations

In the study of the inequality in the development of health care and education caused by the development of science and technology and the strategies to deal with it, many problems and challenges have been encountered.

First of all, data acquisition and analysis have become a major challenge. The uneven development of science and technology makes data collection more difficult, especially in remote and underdeveloped areas, and the lack and inaccuracy of data seriously affect the reliability of research results. On top of that, over time, many data may be lost or incorrect, resulting in a certain amount of interference with the research.

References

- [1] Zhang, Jianhong. Discussion on the Modern Scientific and Technological Revolution and the Development of Medicine. *Continuing Medical Education*, 2007 (34): 23-25.
- [2] Zheng, Jie. The Impact of Digital Transformation on Educational Equity: An In-depth Analysis Based on Resource Allocation and Technology Integration. *Advances in Education*, 2024, 14 (7): 406-415. <https://doi.org/10.12677/ae.2024.1471178>.
- [3] Tao, Shuangbin, Gong, Xinjue. The Impact of Artificial Intelligence Development on Social Inequality: An Analysis Based on the Debate in the Literature. *Journal of Liaoning Radio and TV University*, 2022 (02): 91-94.
- [4] Yao Rui, Wenli Zhang, Richard Evans, Guang Cao, Tianqi Rui, and Lining Shen. Inequities in health care services caused by the adoption of digital health technologies: scoping review. *Journal of medical Internet research*, 2022, 24 (3): e34144.
- [5] Guo, Yuan-zhi, Yang Zhou, and Yan-sui Liu. The inequality of educational resources and its countermeasures for rural revitalization in southwest China. *Journal of Mountain Science*, 2020, 17 (2): 304-315.
- [6] Zhang, Rui, Yong Chen, Shili Liu, Shengxiang Liang, Geng Wang, Li Li, Xingneng Luo, and Ying Li. Progress of equalizing basic public health services in Southwest China---health education delivery in primary healthcare sectors. *BMC Health Services Research*, 2020, 20: 1-13.
- [7] Ringborg, Ulrik, Joachim von Braun, Julio Celis, Michael Baumann, Anton Berns, Alexander Eggermont, Edith Heard et al. Strategies to decrease inequalities in cancer therapeutics, care and prevention: Proceedings on a conference organized by the Pontifical Academy of Sciences and the European Academy of Cancer Sciences, Vatican City, February 23–24, 2023. *Molecular Oncology*, 2024, 18 (2): 245.
- [8] Wang, Zexi. A Comparative Analysis of Influencing Factors and Countermeasures of Gender Inequality in Higher Education: Based on The Comparison of Mainland China and Hong Kong, China. *Journal of Education, Humanities and Social Sciences*, 2023, 13: 184-189.
- [9] Chen, Yiyi, Zhou Yin, and Qiong Xie. Suggestions to ameliorate the inequity in urban/rural allocation of healthcare resources in China. *International Journal for Equity in Health*, 2014, 13: 1-6.
- [10] Bu, Qingyun. Ethical risks in integrating artificial intelligence into education and potential countermeasures. *Science Insights*, 2022, 41 (1): 561-566.