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A Study of Digital Divide Issues and Impact on Educational Opportunities among Z Generation in Guizhou Province

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1. INTRODUCTION

With the rapid development of information technology, the Internet has become an indispensable part of modern society, which has not only profoundly changed people's way of production and life, but also had a far-reaching impact on the field of education (Yuan, L,2020). The Internet offers unprecedented opportunities for sharing educational resources, innovating teaching methods, and expanding learning environments. However, this access is not balanced, and the problem of digital divide is becoming increasingly prominent as one of the key constraints to educational equity. The phrase “digital divide” has been applied to the gap that exists in most areas between those with ready access to the tools of information and communication technologies, and the knowledge that they provide access to, and those without such access or skills. Particularly in Guizhou Province, China, a relatively less economically developed region, further gaps in technology adoption between rural and urban areas are evident. Z Generation (the generation born between 1995 and 2010) (Seemiller, C., & Grace, M,2017).The digital divide in Internet use is of particular concern. Exploring the digital divide problem among Z Generation in Guizhou Province and its impact on educational opportunities not only has important theoretical significance, but also has urgent practical needs. In terms of theoretical significance, the study of the impact of the digital divide on educational opportunities can help deepen the understanding of the issue of educational equity and provide a scientific basis for the formulation of relevant policies. Addressing the digital divide among students and cities, as well as promoting educational equity, is an urgent issue that needs to be resolved in Guizhou Province and across the country. This study aims to uncover and examine the digital divide related to Internet usage among Generation Z in Guizhou Province. It will analyze its specific effects on students' educational opportunities and its implications for reducing educational inequality, along with the broader societal consequences. Finally, the study will propose practical countermeasures and recommendations to tackle this issue moving forward.

1.1 Problem of the Study

Z Generation, as the natives of the digital age, have been closely connected to the Internet since birth (Ameen, N., Hosany, S., & Taheri, B,2023). Their ways of learning, socialising and even thinking are deeply influenced by the Internet, the use of which helps to develop students' information literacy, creativity and critical thinking skills, which are crucial for their overall development.

The lack of economic development, poor construction, and inadequate infrastructure in different cities and regions have made it difficult for students, especially those in Z Generation, to access fair learning opportunities. In Guizhou Province, China, the economy and Internet infrastructure are underdeveloped, which means that many students in some areas cannot take full advantage of online education.

Compared to the eastern coastal regions, Guizhou has a significant gap in Internet access, speed, and the quality of online educational resources. This problem is especially severe in rural areas where many Z Generation students struggle to access reliable Internet or high-quality online educational materials due to economic and geographic challenges. This lack of access negatively impacts their learning, personal growth, and future opportunities.

The situation is even more critical for some Z Generation students who, due to their families' limited economic means, cannot afford high-quality electronic devices like smartphones and tablets. This lack of access restricts their ability to utilize online educational resources compared to their peers who have these devices, creating an unfair learning environment in society.

Additionally, many Z Generation students struggle with Internet skills and digital literacy, particularly when their elders lack this knowledge as well. This disadvantage makes it difficult for them to navigate the vast array of online educational resources and effectively use these tools to enhance their learning.

As a result of these learning limitations, students may miss out on opportunities to improve their living conditions or advance beyond their family's circumstances. This situation contributes to greater societal and global inequality. Consequently, many talented but underprivileged students may not achieve their potential or make valuable contributions to their communities and the nation, ultimately hindering overall societal progress.

In summary, the digital divide limits Z Generation in Guizhou Province from accessing opportunities like high-quality online courses and digital innovation projects. This exacerbates educational inequity, placing some students at a disadvantage and restricting their ability to improve their futures through education, ultimately hindering societal progress and development.

1.2 Purpose of the Study

The digital divide among Z Generation in Guizhou Province, stemming from its complex social formation process, has led to notable differences in Internet access, socioeconomic backgrounds, and digital skills. These factors contribute to the multidimensional aspects of the divide within this generation.

Bourdieu's theory of social stratification can help explain how the digital divide influences the educational opportunities of Z Generation in Guizhou Province. As a new form of economic and social capital, the digital divide affects access to educational resources, involvement in the educational process, and educational outcomes for adolescents from varying socioeconomic backgrounds, thereby intensifying educational inequality.

Therefore, conducting an in-depth analysis of the causes and impacts of the digital divide on Z Generation in Guizhou Province using Bourdieu's theoretical framework can lead to constructive policy recommendations aimed at reducing disparities in digital access and promoting equitable educational opportunities for this generation.

2. LITERATURE REVIEW

2.1 Digital Divide

The digital divide refers to the information gap and increasing polarization between the rich and poor, resulting from varying degrees of access to and use of information and network technologies, as well as differences in innovation capabilities among countries, regions, and groups during the global digitization process (Van Dijk, J., 2020). As information technology rapidly advances, the digital divide has gained significant global attention (Lythreatis, S., Singh, S. K., & El-Kassar, A. N., 2022). Faloye (2022) emphasizes that the digital divide manifests not only in the hardware used to access the Internet but also in how information is accessed, processed, and utilized. Digital divide disparity can arise from various factors, including regional differences, infrastructure development, economic progress, and educational advancement. It can result in imbalances in social development (Jamil, S., 2021).

2.2 Educational Inequity Resulting from the Digital Divide

In education, the digital divide creates an unequal distribution of resources across different regions and groups, which impacts the fairness of educational opportunities (Cheshmehzangi et al., 2023). Helsper (2021) notes that the digital divide worsens social inequality, making it especially challenging for disadvantaged groups in areas such as education and employment. This situation prevents them from improving their circumstances or increasing their income compared to their original family status.

In many developing countries, the issue is particularly acute, as the digital divide and the lack of advanced digital technology and educational resources hinder students' access to quality educational opportunities. Consequently, many students are deprived of high-quality online resources, resulting in unequal educational experiences for both individuals and society as a whole (Mathrani, A., Sarvesh, T., & Umer, R., 2022). This disparity ultimately exacerbates the differences between regions, cities, and even countries.

2.3 Bourdieu's Theory of Social Stratification

Bourdieu's theory of social stratification was developed in a critique of the dichotomy between subjectivism and objectivism (Jovanović, M, 2021). In order to understand the phenomenon of social stratification more fully, Bourdieu introduced the core concepts of field, habitus and capital. Field refers to a social space in which the distribution of various kinds of capital determines people's position and status in it; habitus refers to the specific lifestyles and behavioural patterns that people develop in a particular field; and capital is classified into various forms, such as economic capital, cultural capital and social capital, which play different roles in social stratification (Wang Y,C, 2011).

In the field of education, Bourdieu's theory of social stratification reveals the deeper reasons behind the phenomenon of educational inequality (Mehan, H,2022). He emphasises the important role of cultural capital in educational stratification, pointing out the significant differences in access to and utilisation of educational resources by different social groups. In order to achieve educational equity, the government and all sectors of society need to pay attention to the accumulation and transmission of cultural capital, and narrow the educational gap between different social groups by providing equal educational opportunities and resources (Hu, A., & Yin, C, 2021).

3. CURRENT SITUATION AND CAUSES OF DIGITAL DIVIDE AMONG Z GENERATION IN GUIZHOU PROVINCE

3.1 Urban-rural Digital Divide in Guizhou

The development of underdeveloped regions has intensified the digital divide. This means that the disparity in technological access and usage between urban and rural areas is growing. In Guizhou Province, which is relatively underdeveloped, the level of economic growth directly limits the development and spread of digital infrastructure, worsening the digital divide between urban and rural areas. According to Peng, Z., & Dan, T. (2023), this urban-rural digital divide in Guizhou is a significant issue that manifests at various levels. Specifically, as the gap between urban and rural consumption levels widens, the digital divide becomes increasingly pronounced. The presence of this divide can greatly impede the urbanization process.

As previously mentioned, this issue is not as pronounced in Guiyang City, the capital of Guizhou Province. Due to its more favorable economic conditions, Guiyang is able to invest significantly in the construction of digital infrastructure, such as high-speed networks and smart devices. This investment provides urban residents with abundant digital resources and easy access to information.

In contrast, rural areas suffer from underdeveloped network infrastructure as a result of their relative economic disadvantages. Consequently, members of Generation Z in these regions face greater challenges in accessing digital resources and information. This situation exacerbates the development of human resources in rural areas, leading to a shortage of skilled talent needed for local development, ultimately causing these regions to fall further behind.

In conclusion, the growing digital divide between urban and rural areas, particularly in underdeveloped regions, hampers urbanization and limits access to essential resources for Z Generation. Addressing this divide is crucial for promoting equitable development and ensuring that all communities can benefit from advancements in technology and information.

3.2 Inequality in the Distribution of Educational Resources

Guizhou Province suffers from significant inequality in the distribution of educational resources (Lu et al.,2020). This imbalance is particularly evident in remote areas of Guizhou Province, such as Bijie and Duyun cities, where schools often face a shortage of teachers and poor teaching quality. Many excellent teachers prefer to teach in cities or developed areas, making it difficult for schools in remote areas to attract and retain talented people. At the same time, the teaching facilities in these areas are also relatively backward, lacking modern teaching equipment and resources to meet the needs of digital education. Due to the lack of educational resources, it is difficult to provide high-quality digital education in these areas, thus severely restricting the educational opportunities and digital literacy of Z Generation.

This inequity distribution of educational resources directly affects Z Generation’s educational opportunities. Many Z Generation lack a good educational environment and digital resources because they were born in rural or remote

areas, making it difficult for them to acquire the necessary digital skills. There is an obvious gap between them and their peers in urban areas in terms of information acquisition, knowledge updating and innovation ability, which further exacerbates the phenomenon of digital divide.

3.3 Uneven Levels of Digital Skills

In Guizhou Province, the digital skill levels of Z Generation show significant unevenness due to differences in economic conditions, educational resources, and family background (Wang et al., 2021). Specifically, better-off families are usually able to provide their children with more digital resources and educational opportunities, such as advanced electronic devices, high-speed Internet connections, and rich online educational resources. Children from these families tend to have earlier exposure to and mastery of various digital skills, thus gaining an advantage in the digital age. In contrast, less well-off families struggle to afford the high cost of digital devices and educational resources, resulting in their children being at a disadvantage in terms of digital skills. These children may not be able to learn and enhance their digital skills effectively due to the lack of necessary digital equipment and resources, and thus face more challenges and barriers in the digital society.

This uneven level of digital skills is not only reflected among individuals, but also among different social groups and regions. In Guiyang City, the capital of Guizhou Province, Z Generation generally has a high level of digital skills and is able to make full use of digital resources for self-improvement and innovation. However, in economically backward regions such as Bijie City in Guizhou Province, due to economic conditions, educational resources and infrastructure constraints, Generation Z generally has lower digital skill levels, making it difficult for them to integrate into the digital society and enjoy the convenience and opportunities it brings.

4. THE IMPACT OF DIGITAL DIVIDE ISSUES ON EDUCATIONAL OPPORTUNITIES AMONG Z GENERATION IN GUIZHOU PROVINCE

4.1 Inequality Access to Educational Resources

While online learning platforms have provided everyone with the opportunity to learn, not everyone is enjoying this experience due to limitations in hardware or accessible facilities. The digital divide has led to significant inequality in access to educational resources among Z Generation. (Xie, Y., 2024; Reznikova, N.et al., 2023).This inequality is particularly prominent in Guizhou Province. In the economically developed urban areas of Guizhou Province, Z Generation is able to take advantage of the convenient online environment to easily access rich and diverse educational resources, such as online courses, e-books, and interactive learning platforms. These resources not only enhance their learning efficiency, but also broaden their knowledge horizons, laying a solid foundation for their future development.

However, in the rural areas of Guizhou Province, the situation is quite different. Due to insufficient network coverage and lack of equipment, Z Generation in rural areas face many difficulties in accessing educational resources. Many children do not have computers or smartphones at home, and even if they do, they may not be able to watch online courses or download learning materials smoothly due to unstable or slow internet signals. This unequal access to resources not only seriously affects the learning outcomes of rural Z Generation, but also limits their development potential. This inequality in access to educational resources not only exacerbates the education gap between urban and rural areas in Guizhou Province, but also restricts the overall development of Z Generation in rural areas.

4.2 Limited Educational Opportunities

The digital divide's limitations on Z Generation's educational opportunities are particularly evident in Guizhou Province. According to the latest data from the Guizhou Provincial Department of Education, students in rural areas are far less engaged than those in urban areas in fields such as computer science and artificial intelligence. As these fields often require advanced digital skills and resources to support them, the general lack of relevant equipment and educational resources in rural areas results in rural Z Generation being at a competitive disadvantage in these fields.

In Dafang County, Guizhou Province, less than 10 per cent of rural schools are able to offer computer science courses, compared to more than 80 per cent of schools in Guiyang City, the provincial capital. This means that the vast majority of rural Z Generation do not have access to a basic education in computer science, let alone in-depth

study and practice. Similarly, in the field of artificial intelligence, which requires large amounts of data resources and computing equipment, it is even more difficult for Z Generation in rural areas to reach.

This unequal distribution of educational resources severely limits the possibilities of rural Z Generation in choosing their educational direction and future career paths. Many rural students who aspire to a career in computer science or AI have to give up their dreams in favour of other, more traditional, educational paths due to a lack of the necessary learning and practical opportunities. This not only wastes a great deal of talent potential, but also exacerbates the education gap and employment inequality between urban and rural areas in Guizhou Province.

4.3 Impact on Educational Equity

The existence of the digital divide further exacerbates educational inequity in Guizhou Province. Z Generation living in urban areas have significantly better educational opportunities and development prospects than their peers in rural areas due to their ability to more fully utilise digital technologies and resources. Urban schools are generally equipped with state-of-the-art multimedia teaching equipment and high-speed networks, allowing students to easily access online educational resources, participate in distance learning programmes, and stay in sync with global knowledge and information. This advantage puts urban Z Generation at the forefront of academic competition, skill development, and overall quality improvement (Rodríguez-Abitia et al., 2020).

In contrast, Z Generation in rural areas struggles to enjoy the same educational opportunities and resources due to the digital divide. Many rural schools lack basic digital teaching and learning facilities and have insufficient network coverage, making it difficult for students to access quality online educational resources and information. This unbalanced distribution of resources has led to a significant gap between rural Z Generation and urban students in terms of learning conditions, knowledge updating and horizon expansion.

This educational inequity not only affects individual growth and development, but also restricts talent cultivation and social progress in Guizhou Province as a whole. Due to the lack of educational resources, it is often difficult for Z Generation in rural areas to cultivate talents with high skills and innovative abilities, which to a certain extent limits the potential for economic and social development in Guizhou Province.

5. RECOMMENDATION TO MITIGATE THE EFFECTS OF THE DIGITAL DIVIDE ON EDUCATIONAL OPPORTUNITIES FOR GENERATION Z IN GUIZHOU PROVINCE

5.1 Increase Investment in Digital Infrastructure Construction in Rural Areas

Guizhou Province should further increase investment in digital infrastructure construction in rural areas, especially accelerating network coverage and broadband speed-up projects. Through the introduction of social capital and government cooperation (PPP) models, it should promote the extension of infrastructure such as fibre-optic networks and 4G/5G base stations to rural areas to ensure that rural Z Generation can enjoy network services of the same quality as those in cities. At the same time, strengthen the construction of digital teaching facilities in rural areas, such as equipping computer classrooms and electronic libraries, to provide rural students with the necessary learning equipment and resources.

5.2 Promote Digital Education Resources and Applications

Guizhou Province should actively promote the development and promotion of digital educational resources, especially for the needs of students in rural areas (Liu et al., 2019). Through the construction of provincial digital education resource platforms, high-quality online courses, e-books, virtual laboratories and other resources are integrated and made available to rural students free of charge or at low cost. At the same time, educational institutions, enterprises and individuals are encouraged and supported to develop digital education applications suitable for rural students, such as mobile learning APPs and online education platforms, so as to improve the accessibility and convenience of educational resources.

5.3 Enhancing IT Training for Educators in Rural Areas

As a key advocate for digital education, improving the IT skills of rural teachers is essential for bridging the digital

divide. Guizhou Province should enhance IT training for these educators, focusing on fundamental computer operations, the use of multimedia teaching software, and the access and integration of online educational resources. By implementing regular training courses, workshops, and online learning activities, the digital literacy and teaching capabilities of rural teachers can be significantly improved, enabling them to effectively utilize digital tools in their instructional methods. Consequently, students will be better equipped to navigate online resources and enhance their learning experiences.

5.4 Special Education Policy for Students in Rural Areas

To mitigate the educational disadvantages faced by Generation Z in rural areas, Guizhou Province should implement differentiated educational policies to provide targeted support. For instance, financial assistance can be offered to exceptional rural students through the establishment of specialized scholarships and grants (McPherson, M., & Schapiro, M., 2021). Additionally, measures such as targeted enrollment can create more pathways for rural students to access high-quality higher education institutions. Increased funding for computer facilities is also essential to ensure they have the basic tools necessary for online learning.

Simultaneously, fostering partnerships with businesses and community organizations can help provide rural students with more internship, employment, and entrepreneurship opportunities, facilitating their integration into the real-world business environment, digital economy and society. Encouraging businesses to offer informational sessions and internship opportunities can expose students to real-world operations, which may be beneficial in their future careers. Furthermore, promoting the hiring of rural students by companies can create opportunities for them to showcase their talents and potential.

5.5 Fostering Urban-Rural Educational Collaboration and Student Exchange Opportunities

Strengthening urban-rural educational cooperation and exchange is an effective strategy to narrow the digital divide and promote educational equity (Luo et al., 2022), and Guizhou Province should actively establish twinning relationships between urban and rural schools to facilitate the balanced allocation of educational resources through mutual teacher assignments, student exchanges, and resource sharing. This collaboration will not only allow urban schools to export advanced educational concepts, teaching methods, and management practices to rural schools, thereby improving the quality of education but also provide rural students with exposure to superior learning resources and technologies. By enhancing educational equality, this initiative aims to empower Generation Z students in Guizhou Province with the skills and knowledge necessary to thrive in a rapidly changing digital landscape, ultimately creating more equal educational opportunities and fostering a more inclusive educational environment for all.

6. CONCLUSION

In conclusion, the rapid advancement of information technology and the increasing role of the Internet have transformed modern society and education but have also highlighted the issue of the digital divide, particularly in economically underserved regions like Guizhou Province, China. For Z Generation, this divide significantly hinders access to educational resources, exacerbating urban-rural inequities and limiting their potential for future success.

Exploring the impact of the digital divide on educational opportunities among Guizhou's Z Generation reveals the urgency and importance of addressing this challenge to promote educational equity. Economic development, infrastructure, resource distribution, and family circumstances all contribute to the barriers faced by rural students.

To effectively tackle these issues, implementing targeted countermeasures is crucial. Enhancing digital infrastructure, advancing digital education resources, providing comprehensive IT training for rural teachers, and fostering urban-rural educational collaboration are vital strategies. These measures will help narrow the educational gap and create a more equitable learning environment that supports the development of rural students.

Moving forward, Guizhou Province must remain committed to addressing the digital divide and continuously innovate educational practices and policies. Ensuring that all members of Z Generation can benefit from the opportunities presented by the digital age is essential for unlocking their potential and contributing to the overall advancement of education and society both in Guizhou Province and nationwide. By doing so, it can promote a fairer, higher-quality educational landscape for future generations.

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