



The Impact of Chinese Online Education Platforms on Educational Equity: a Social Distributivist Perspective

Fangning Lyu^{*#} and Yue Mao[#]

Academy of Future Education, Xi'an Jiaotong-Liverpool University, Suzhou, 2151235, China

[#]These authors contributed equally to this work.

*Fangning.Lyu24@student.xjtlu.edu.cn

Abstract. This study analyzes the impact of online education platforms on educational equity in China from the perspective of social distribution justice. This paper uses a literature review and quantitative research methods to collect data through a questionnaire survey to explore the role of social distribution justice in allocating educational resources. The results show that family income affects the frequency of platform use and educational outcomes, and high-income families use the platform more frequently. The use frequency of online education platforms is positively correlated with the demand for educational resources. Still, the distribution of resources is unfair, and the promotion method affects the equity of resources. Research shows that online education platforms have uneven resource distribution, and it is suggested to strengthen support for low-income and rural families, optimize resource allocation, improve recommendation mechanisms, expand sample size, and explore the role of technological innovation in education equity in the future.

Keywords: Online education platform, Educational equity, Social distributivist perspective

1 Introduction

1.1 Research Background and Significance

In the context of the global post-epidemic era, digital transformation has penetrated all aspects of society. European Commission indicates that computers are rapidly altering the processes by which knowledge is created, accessed, disseminated, validated, and applied^[1]. The COVID-19 pandemic has further expedited this trend, significantly accelerating the shift towards online and hybrid learning models^[2]. Equality in education is the sustainable development goal adopted by the United Nations in 2015. Online education platforms are generally regarded as an effective way to achieve equal opportunities and educational equity.

1.2 Research Objectives and Problems

This study aims to analyze the role of online education platforms in education equity in China, focusing on their impact on urban-rural disparity, income gap, and education equity. Based on this, this paper raises the following research questions:

A. What role does distributive justice play in educational equity?

B. What role does online education play in educational equity?

This study will evaluate the fairness of educational resource distribution in different social groups and online education platforms in China and discuss it based on the theoretical framework of distributive justice.

2 Literature Review

With the progress of technology and the spread of COVID-19, online education platforms are becoming more and more important in education. Guidelines for ICT in education policies and masterplans believe that online education platforms have an important role to play in supporting transformative reform in education^[3]. *The Digital Transformation of Education: Connecting Schools, Empowering Learners* highlights the importance of digital connectivity in education^[4], aiming to improve the quality and accessibility of education through technology. Digital Education Action Plan (2021-2027) sets out two strategic priorities to promote the development of a high-performance digital education ecosystem and enhance digital skills to promote the digital transformation of education. Zakaria found that modern technology can effectively support distance learning across time and space constraints^[5]. Unlike traditional offline education models, online education platforms have broken the constraints of time and space and injected new vitality into the transformation and development of the education industry. Madden^[6], McIntyre^[7], and Azhar^[2] point out that there are gender, racial, economic, and other inequalities in online education, and it is necessary to pay attention to the educational opportunities of disadvantaged groups. Gao et al.^[8] and Nguyen Duc Huu et al.^[9] examined the impact of online education on educational inequality and found that while it helps to close the gap, rural and minority students still face challenges. Bates focuses on how to effectively use technology to carry out educational activities and puts forward the ACTIONS model^[10], emphasizing that the selection of educational technology should consider its impact on educational equity. As noted in the Futures of Education: Learning to Become, education is the foundation for social renewal and transformation, driving economic justice, social inclusion, and environmental sustainability^[11]. Online education platforms are expected to narrow the education gap between students from different regions and socioeconomic backgrounds, thereby promoting social equity.

Education equity covers fairness at the start, fairness during the process, and fairness in the outcome. John Rawls' theory of distributive justice emphasizes that resource allocation should benefit the least advantaged groups^[12]. Online education platforms theoretically can promote educational equity through the distribution of personalized learning resources, but the actual effect is still influenced by factors such as technological access and socio-economic conditions.

3 Research Methodology

3.1 Research Design and Questionnaire Development

This study employs a quantitative research design, utilizing a structured questionnaire survey for data collection. A pilot test with a diverse group of students evaluated the clarity, comprehensibility, and completion time of the questionnaire. Invalid responses—such as incomplete or illogical answers—were excluded. The final version included 20 items addressing parents' feedback on their experiences with online education platforms and suggestions for improvement. Participants were selected from various regions, income levels, and educational backgrounds across China to ensure representativeness.

3.2 Data Collection and Analytical Methods

Data were collected online and offline. A total of 758 questionnaires were distributed via QuestionnaireStar Online platform and face-to-face interactions; 691 valid responses were obtained, resulting in a response rate of 91.16%. Data analysis was conducted using Microsoft Excel and SPSS software. Descriptive statistics summarized sample characteristics followed by correlation analysis to examine relationships between key variables. Regression analysis assessed the influence of various factors on participants' experiences with online education platforms.

4 Results and Discussion

4.1 Descriptive Statistical Analysis

Fig. 1. illustrates the geographical distribution of the respondents. Most participants (28.5%) were from first-tier cities, followed by 27.5% from second-tier cities, and another 27.5% from third-tier or lower cities. A smaller proportion of respondents (16.5%) were from rural areas.

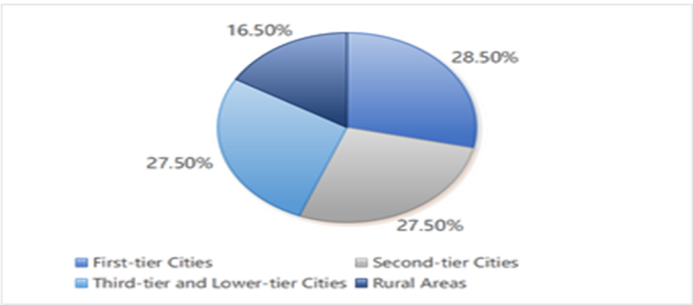


Fig. 1. Geographical Distribution of Respondents.

Fig. 2. shows the monthly household income of 57.5% of respondents falls within the range of 3001-12000 RMB, while 27.5% of households have a monthly income

exceeding 12000 RMB. The remaining 15% of households report a monthly income below 3000 RMB.

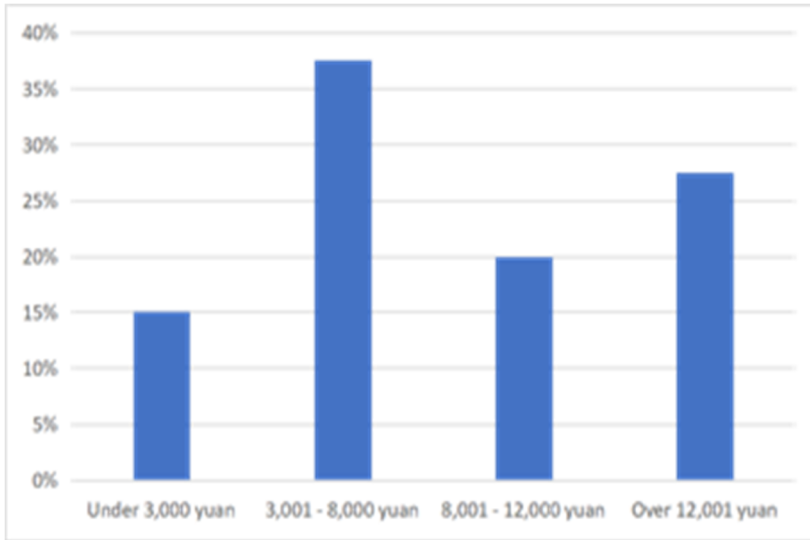


Fig. 2. Household Income Distribution of Respondents.

4.2 Social Distribution Justice and the Use of Online Education Platforms

The application of social distribution justice in the educational field emphasizes the equitable allocation of educational resources, particularly for disadvantaged groups. This study explores the manifestation of social distribution justice by examining the relationship between household income and the frequency of online education platform use, as shown in Table 1.

Correlation analysis revealed a significant positive correlation between household income and the frequency of children’s use of online education platforms ($r = 0.42$, $p < 0.05$). This suggests that higher-income households have greater access to resources such as devices and stable internet connectivity, which facilitate their children's participation in online education, thereby increasing their opportunities to access educational resources.

Regression analysis further indicated that household income significantly affects educational outcomes ($\beta = 0.39$, $p < 0.01$). Specifically, higher-income families are more likely to utilize online education platforms to enhance their children’s learning outcomes. This finding underscores that household income remains a key factor influencing the equitable distribution of educational resources.

Table 1. Relationship between Household Income and the Frequency of Online Education Platform Use

/	Correlation Coefficient (r)	Regression Coefficient (β)	t-statistic	p-value
Correlation Analysis	0.42**	-	-	0.000**
Regression Analysis	-	0.39	2.45	0.000*

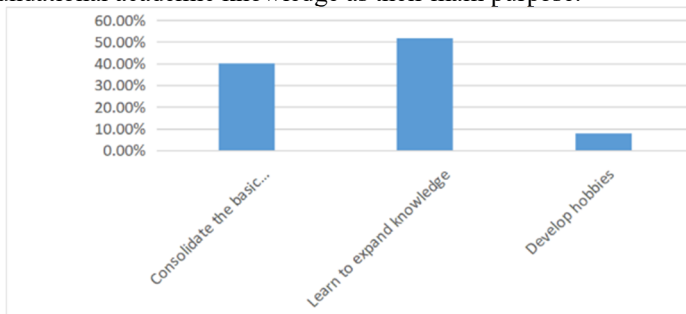
Note. $p^{**} < 0.05$, $p^* < 0.01$

Although the Chinese government has strongly promoted the "Internet + Education" policy, encouraging various stakeholders to develop online education, particularly in rural areas to promote quality educational resources^[13], further measures are necessary to ensure equal access to online educational resources for low-income families. These measures could include providing subsidies for devices, offering discounted courses, and ensuring the availability of high-quality educational resources.

4.3 Distributive Justice and Education Resource Allocation

The application of distributive justice theory in education highlights that resource allocation should align with the actual needs of different groups. This study analyzes the relationship between educational needs and online education platform usage by examining respondents' perceptions of resource disparities.

Fig. 3. shows that 51.61% of parents reported using online platforms primarily to expand their children's knowledge, such as advanced English or programming, indicating that choices are based on specific learning needs. Additionally, 40.33% cited reinforcing foundational academic knowledge as their main purpose.

**Fig. 3.** Geographical Distribution of Respondents.

Correlation analysis reveals a significant positive relationship between online platform usage frequency and demand for educational resources ($r = 0.45$, $p < 0.01$). Table 2 suggests that higher family demand correlates with increased use of these platforms, emphasizing how educational needs drive platform utilization while raising fairness concerns for families with high needs but limited resources.

Regression analysis further indicates that distributive justice significantly influences the redistribution of educational resources ($\beta = 0.29$, $p < 0.05$). In low-income and rural households, children's educational needs are particularly pressing.

Table 2. Relationship between Online Education Platform Usage Frequency and Demand for Educational Resources

/	Correlation Coefficient (r)	Regression Coefficient (β)	t-statistic	p-value
Correlation Analysis	0.45*	-	-	0.000*
Regression Analysis	-	0.29	2.30	0.000**

Note. $p^{**} < 0.05$, $p^{*} < 0.01$

To better achieve distributive justice, online education platforms should offer differentiated resources based on the needs of different groups. According to the Opinions on Regulating the Development of Off-Campus Training Institutions, online education platforms should place more emphasis on the teaching of core subjects, especially for students from low-income and rural areas^[14]. However, it is evident that the excessive emphasis on market-driven advanced courses severely challenges the fairness of educational resource allocation.

4.4 Procedural Justice and the Fairness of Educational Resource Distribution

The application of procedural justice in the education sector emphasizes fairness in the process of resource allocation, meaning that all relevant parties should have equal participation opportunities and transparent procedures throughout the distribution process. This study examines the relationship between respondents' perceptions of the frequency of recommendations by online education platforms and the fairness of educational resources.

As shown in Figure 4, 59% of surveyed parents believe that online education platforms have a positive impact on educational equity, while 15% view their impact as negative.

Fig. 4. shows that 59% of surveyed parents believe that online education platforms have a positive impact on educational equity, while 15% view their impact as negative.

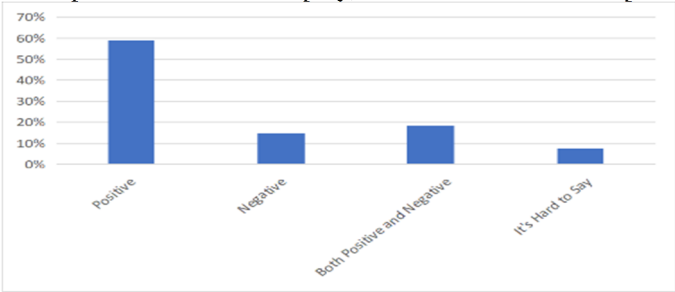


Fig. 4. Users' Perception of Online Education Platforms on the Fairness of Education.

Most parents perceive that online education platforms provide high-quality educational resources that would otherwise be inaccessible to their children. However, there is a noticeable discrepancy between platform recommendations and the equitable distribution of resources. According to regression analysis, there is a significant negative correlation between the platform's promotion methods and the fairness of educational

resources ($\beta = -0.23, p < 0.05$). Table 3 indicates that courses promoted through advertisements and recommendations tend to prioritize students from higher-income families and urban areas, while overlooking the needs of rural and low-income households.

Table 3. Regression Analysis Between Frequency of Platform Recommendations and Educational Resource Fairness

/	Regression Coefficient (β)	t-statistic	p-value
Regression Analysis	-0.23	-2.12	0.000**

Note. $p^{**} < 0.05, p^* < 0.01$

The EU Cooperation highlights the importance of ensuring marginalized groups have equal access to learning opportunities through digital means^[15]. Similarly, Chinese online education platforms need to enhance their promotional strategies to better align with educational equity. It is essential to avoid excessive marketing and ensure that students from all regions and income levels have equal access to educational opportunities.

5 Conclusion

5.1 Research Summary

This study demonstrates that online education platforms play a significant role in redistributing educational resources. However, the distribution of these resources is not equitable across different social groups. Children from high-income and urban households can access online education platforms more frequently and derive greater benefits. The analysis based on the principles of distributive justice highlights that the resource allocation of online education platforms exacerbates educational inequalities, particularly in the areas of procedural justice and need-based justice.

5.2 Policy Recommendations

Social Distributive Justice: To enhance social distributive justice, it is essential to strengthen support for low-income and rural households. This can be achieved by providing more subsidies for devices, offering free courses, and ensuring access to high-quality educational resources.

Need-Based Distributive Justice: In terms of need-based justice, the government should introduce policies to guide platforms in providing differentiated resources tailored to the needs of various social groups, particularly in foundational education.

Procedural Distributive Justice: Improving the recommendation mechanisms of online education platforms is essential to ensure the fair distribution of educational resources. Platforms should avoid relying solely on advertising and marketing strategies that prioritize attracting students from high-income households.

5.3 Limitations and Future Research Directions

This study collected 691 valid responses, which, although representative, is relatively small given the vast population base in China. Additionally, future studies should explore the role of technological innovations in enhancing educational equity, with the potential to contribute Chinese solutions to global educational fairness. The evolving nature of education technologies presents an opportunity for future research to examine how new developments can mitigate existing disparities in educational access and outcomes.

Statement on the Use of Generative AI and AI-Assisted Technologies in the Writing Process

In preparing this paper, the authors used ChatGPT (a generative AI tool) to assist with the following tasks:

1. Optimizing portions of the text, particularly in terms of language expression;
2. Providing suggestions regarding research methods and literature review.

After using this AI tool, the author reviewed and edited the paper as needed and assumed full responsibility for the content published in the paper.

References

1. European Commission. (2020). Digital Education Action Plan 2021 - 2027: Resetting Education and Training for the Digital Age [EB/OL]. Retrieved September 30, 2020, and March 22, 2023, from https://ec.europa.eu/education/education-in-the-eu/digital-education-action-plan_en.
2. Azhar, N., Ahmad, W. F. W., & Bakar, Z. A. (2021). Proposed Acceptance Framework of Online Learning Platform for Urban Poor. 2021 International Conference on Computer & Information Sciences (ICCOINS), Computer & Information Sciences (ICCOINS), 2021 International Conference On, 174–179. <https://doi.org/10.1109/ICCOINS49721.2021.9497230>.
3. UNESCO. (2022). Guidelines for ICT in education policies and masterplans. Paris, France: UNESCO. unesdoc.unesco.org/ark:/48223/pf0000380926/PDF/380926eng.pdf.multi.
4. epulveda, A. (2023). The Digital Transformation of Education: Connecting Schools, Empowering Learners [DB/OL]. Retrieved March 22, 2023, from <https://unesdoc.unesco.org/ark:/48223/pf0000374309>.
5. Zakaria, N. N. (2024). Distance Learning through the Grand Egyptian Museum: Leveraging Modern Technology to Teach about Ancient Egypt among Schools and National Museums. *Education Sciences*, 14(7), 714. <https://doi.org/10.3390/educsci14070714>.
6. Madden, J. (2020). Teaching Online: Issues of Equity and Access in Writing-centric Formats. *Feminist Studies*, 46(2), 502–509. <https://doi.org/10.15767/feministstudies.46.2.0502>.
7. McIntyre, N. A. (2023). Access to online learning: Machine learning analysis from a social justice perspective. *Education & Information Technologies*, 28(4), 3787–3832. <https://doi.org/10.1007/s10639-022-11280-5>.
8. Gao, X., Luo, J., Chen, H., Zhen, Y., Zhang, J., & Fu, X. (2024). Alleviating educational inequality in math with the aid of online shadow education— the impact of equal access and equal quality mechanisms. *Education and Information Technologies: The Official Journal*

- of the IFIP Technical Committee on Education, 29(9), 10571–10593. <https://doi.org/10.1007/s10639-023-12214-5>.
9. Nguyen Duc Huu, Le Van Tan, & Phan Thi Luyen. (2022). Equality in Online Education during COVID-19: Challenging the Educational Needs of Ethnic Minority Students in Vietnam. *Law, State & Telecommunications Review / Revista de Direito, Estado e Telecomunicações*, 14(1), 31–51. <https://doi.org/10.26512/lstr.v14i1.40032>.
 10. Bates, A.W. 2005. *Technology, E-learning and Distance Education*. London, Routledge.
 11. UNESCO. (2019). *Futures of Education: learning to become*. Paris, France: UNESCO. <https://unesdoc.unesco.org/ark:/48223/pf0000370801>.
 12. RAWLS, J. (1999). *A Theory of Justice: Revised Edition*. Harvard University Press. <https://doi.org/10.2307/j.ctvkjb25m>.
 13. State Council of the People's Republic of China. (2019). Interpretation of the "Internet + Education" policy. The State Council of the People's Republic of China. https://www.gov.cn/zhengce/2019-08/29/content_5425524.htm.
 14. State Council of the People's Republic of China. (2018). Opinions on regulating the development of off-campus training institutions. State Council of the People's Republic of China. https://www.gov.cn/zhengce/content/2018-08/22/content_5315668.htm.
 15. European Union. (2016). EU cooperation in education and training (ET 2020). EUR-Lex. <https://eur-lex.europa.eu/EN/legal-content/summary/eu-cooperation-in-education-and-training-et-2020.html>.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

