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Utilizing Baidu Index Data to Investigate the Spatiotemporal Characteristics of Public Concern towards Lifelong Education

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Abstract

Background and purpose: With the advancement of Industry 4.0 and the vigorous development of the Internet, search engines have become one of the important platforms for the public to obtain information. As the world's largest Chinese search engine, Baidu is widely popular with the Chinese public. Similar to Google Trends, Baidu Index is one of the most important databases in the Internet and even in the entire data age. This study adopted Baidu Index to investigate the public's attention to "Lifelong Education" and analyze its changing trend and geographical distribution, so as to grasp the public's attention to it in a more comprehensive way. **Materials and methods:** Baidu Index was used to obtain the attention of the keyword "Lifelong Education" from July 1, 2013 to November 1, 2023; The characteristics of attention are analyzed from three aspects: trend research, demand graph and user portrait. Finally, this study focuses on the comparison between the keyword "Lifelong Education" in this study and the related word "Lifelong Education Platform". **Results:** From

the perspective of trend research, the search trend of the term "Lifelong Education" showed two obvious fluctuations during the period from July 1, 2013 to November 1, 2023, both of which showed an initial rise and then a decline. According to the demand graph, the public pays the most attention to "Lifelong Education Platform", "Lifelong Learning" and "Compulsory Education". Through the user persona, we know that the group that pays more attention to "Lifelong Education" is mainly distributed in East China, mostly female, 20-29 years old. At the same time, the search trend of the related word "Lifelong Education Platform" is similar to that of the keyword "Lifelong Learning" in this study, and its focus groups are also mainly distributed in East China. **Conclusion:** Similar to Google Trends, Baidu Index is a useful tool to study the trend of keyword search, insight into the change of netizens' demand and monitor the trend of media public opinion. The results show that the main reasons for the two obvious changes in search volume are that the National Open University open freely lifelong education platform and provides a free and comprehensive learning resources, and "Lifelong Education" appears as a translation in the National College English Test Band 4 (CET-4) in June 2023. The public is more inclined to know about "Lifelong Education Platform", "Lifelong Learning", "Compulsory Education" and other information related to lifelong education.

Keywords: Lifelong Education; Lifelong Education Platform; Lifelong Learning; Search Engine; Baidu Index

1. Introduction

French educationalist Paul Lengrand is widely regarded as the founder of the idea of lifelong education, he said "If it is agreed that the educational process must continue throughout the life of the individual, then it is impossible to argue that there is an age set aside for education"^[1]. *Learn to be: The World of Education Today and Tomorrow* stated "Education is no longer the privilege of an elite or the concomitant of a particular age: to an increasing extent, it is reaching out to embrace the whole of society and the entire lifespan of the individual"^[2]. The concept of lifelong education has, not without difficulty, begun to be adopted as a principle of educational policy and planning by politicians and educationists, and this development has signified a new interest in lifelong education for many countries^[3]. At present, government departments and education departments in some countries have taken the construction of a lifelong education system as an important education development strategy. The Chinese government has proposed to "actively develop continuing education, improve the lifelong education system, and build a learning society", and "do a good job in continuing education and accelerate the construction of a learning society", highlighting the important position of continuing education in the process of building a learning society. In October 2022, the Chinese government further proposed to build a high-quality lifelong education system and build a learning society and a learning country with lifelong learning for all^[4]. *The "Modernization of Education in China 2035"* further emphasizes that the construction of a modern lifelong education system serving the whole people is not only to become a learning country and a talent country, but also to lay a solid foundation for the construction of socialist modernization of a powerful country^[5]. The essence of lifelong education should ultimately

be implemented in the development of the individual, and the theory of lifelong education is based on the deep reflection on the finitude of human beings, the recognition of the complexity of human nature and the imperfection of human nature, advocating the use of education to create a better world, and the use of lifelong learning to achieve "human all-round, free and full development"^[6]. Education in the narrow sense is school education, which has many shortcomings in restricting the place of education, the number of people receiving education, and the time for education. As an advanced educational ideology and social development strategy, lifelong education can make up for the shortcomings of school education to a large extent, including school education, family education and social education, which is helpful to break through the time and space limitations of personal development.

Promoting lifelong education is an extremely important endeavor, whether at the national, social or individual level. Lifelong education is an inevitable stage of development in the history of educational development, and with the mission of exploring future human nature and seeking social certainty, it comes at an opportune time in the process of socialism with Chinese characteristics in the new era, and it is the value demanded of education at a certain stage of social development^[7]. Lifelong education is the cornerstone of the construction of a learning society, in order to further deepen the construction of a modern lifelong education system and a learning society, we should have an in-depth and comprehensive understanding of modern lifelong education ideas, and at the same time promoting the coordinated development of all levels and types of education on the platform of lifelong education system^[8]. Since May 20, 2022, China's "National Open University Lifelong Education Platform" have been opened to the public free of charge, which is a new learning platform built by the National Open University on the basis of the existing "One Road, One Network, One Platform" in order to promote educational equity and reduce the "digital divide". The "Lifelong Education Platform" is committed to meeting the diversified and personalized learning needs of the public and empowering lifelong education with digital technology, which is one of the achievements of firmly promoting the national education digitalization strategy^[9]. The launch of the platform has attracted the attention of the public. To sum up, lifelong education is not only related to the construction of an educational powerful country, but also has a far-reaching impact on the all-round development of individuals, and has paid extensive attention from the country, society and people.

Since the 21st century, the Internet has developed rapidly, and emerging information technologies marked by big data and the Internet of Things have continuously affected people's lives. Ginsberg et al.'s successful prediction of influenza levels in the United States using Google Trends is considered the earliest use of web search data^[10]. Today's society is an information-based and digital society, and with the rise of artificial intelligence technology, big data has been applied to various fields and has become an effective statistical analysis tool. With the rapid development of the Internet, users will generate a series of network data by leaving search traces in the process of using search engines. As the most widely used search engine by the public, its Baidu Index provides a basis for understanding the public's attention to lifelong education. The research results on the combination of Baidu index and many fields are relatively rich. Scholars used the Baidu index to conduct researches on Inclusive Education^[11], Children's Mental Health^[12] and Knowledge Management^[13], but there is no research that applies the Baidu index to the field "lifelong education."

2. Materials and Methods

According to the Stat counter website, from July 2013 to November 2023, the search engine with the largest market share in the world is Google (Figure 1). In China, Baidu is the world's largest Chinese search engine (Figure 2), which combines search functions and intelligent information recommendations to provide Baidu Index, Baidu Statistics, Baidu

Cloud Observation and other service platforms. Baidu has launched a data sharing platform based on Baidu's massive netizen behavior data—Baidu Index, since its launch in 2006, Baidu Index has been based on 6 billion⁺ search requests per day, Baidu Index has gradually become the most authoritative indicator of open Internet big data, mainly including two Internet access interfaces: PC and mobile devices, three content sections: "trend research", "demand map" and "user portrait".

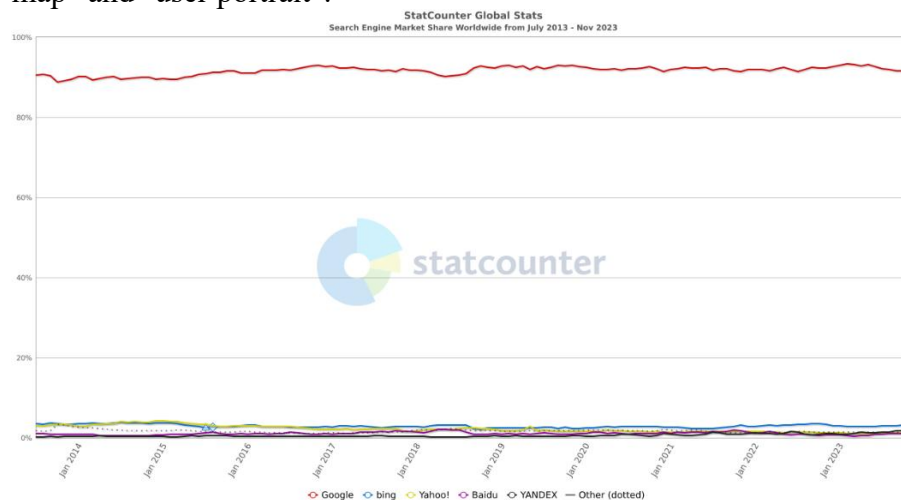


Figure 1. 2013.07-2023.11 Global search engine market share
Source : <https://gs.statcounter.com/>

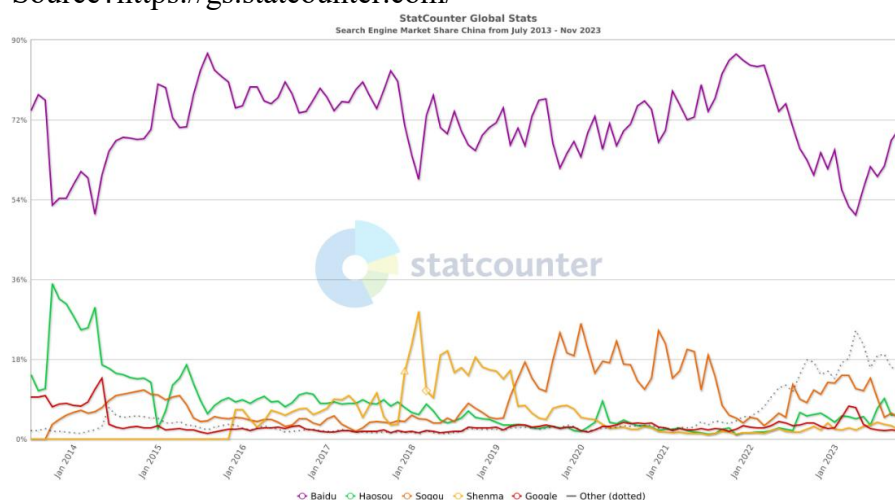


Figure 2. 2013.07-2023.11 Market share of China's search engines
Source : <https://gs.statcounter.com/>

In order to explore the public's social concern about "lifelong education", this study took Baidu index as the data source, took "lifelong education" as the search keyword, and limited the period from July 1, 2013 to November 1, 2023, and summarized the data of the online search trend of "lifelong education" in the past ten years.

3.Results

The study found that there are two main obvious fluctuations in the online search trend of the term "lifelong education", both of which showed an increase and then a decline (Figure 3), Whether it's mobile device or PC, the trend of Baidu's index is similar. The "user portraits" generated by Baidu's index can clearly present information related to lifelong education, with provinces and cities in the dark blue regions representing greater search volumes (Figure 4), It reflects the greater attention to lifelong education in East China and

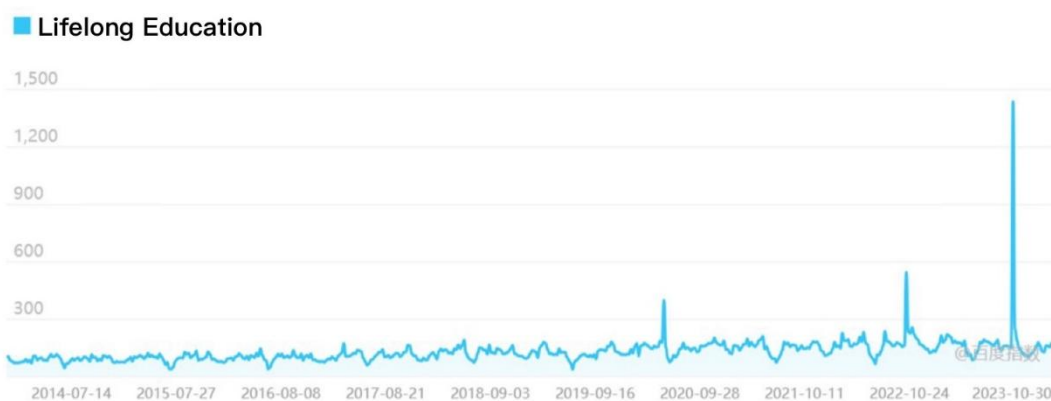
North China. In addition, from the users attribute of the Baidu index, it can be seen that people who search "lifelong education" and related content of it is mainly from 20-29 years old(51.84%), female(69.72%) (Figure 5).



(A) The overall search trend index and average (PC+ Mobile devices)

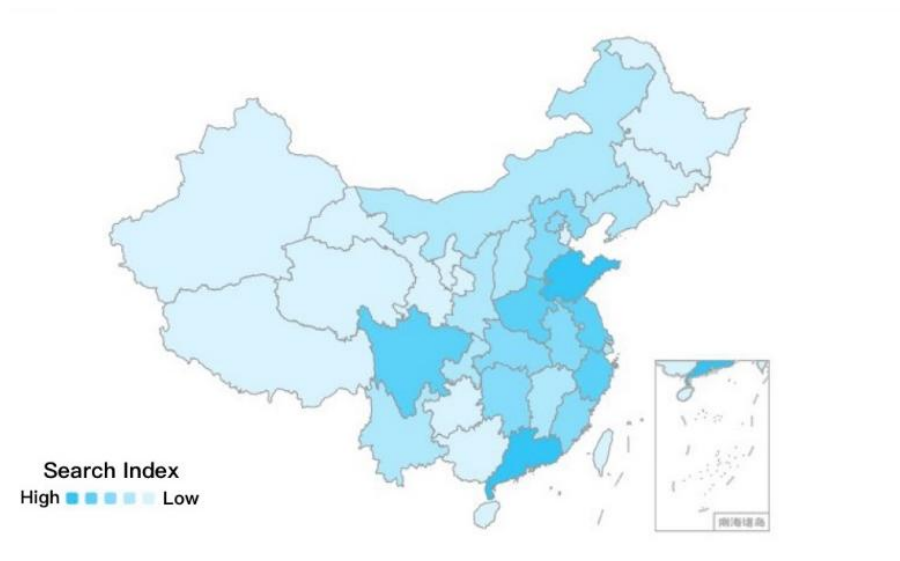


(B) The overall search trend index and average (only PC)



(C) The overall search trend index and average (only mobile devices)

Figure 3. 2013.7.1-2023.11.1Baidu search volume index in China for “Lifelong Education
Source : author’s own research



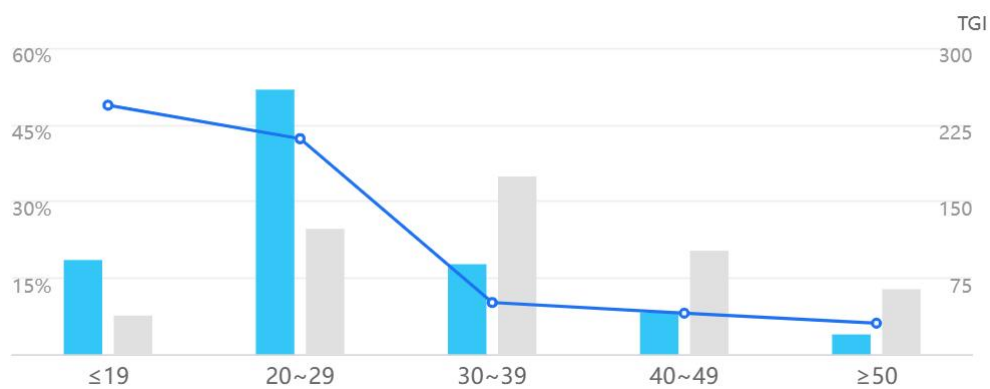
(A)Provinces



(B)Cities

Figure 4. Baidu Index maps for “Lifelong Education”(Date: 2013.7.1-2023.11.1)

Source : author’s own research



(A)Age



(B)Gender

Figure 5. Demographic profiles searching for “Lifelong Education”

Source : author’s own research

Ranking the popular search terms related to "lifelong education" found that Baidu users paid the most attention to the "lifelong education platform" (Figure 6). This study summarizes the changes in the demand map from May 1, 2023 to November 1, 2023, and it can be seen that "lifelong learning" and "compulsory education" are second only to "lifelong education platforms" (Table 1). The search frequency of "lifelong education platform" is higher than that of "lifelong education". This is related to the fact that people tend to type more keywords when using search engines to retrieve information to ensure that the information they receive is comprehensive^[14].



Figure 6. Word Cloud of Words related to “Lifelong Education”

Source : author’s own research

Table 1. Search Terms related to “Lifelong Education”
Source : author’s own research

Order	Keywords	Frequency
1	Lifelong Education Platform	25
2	Lifelong Learning	18
3	Compulsory Education	13
4	School System	12
5	Continuing Education	8
6	Education	8
7	Pedagogy	6
8	Quality Education	6
9	Family Education	4
10	Vocational Education	4

4. Discussion

“In China the concept of lifelong education has a long history. Confucius, one of the country's earliest and greatest educators, taught that life is limited, while learning is limitless.”^[15]. The establishment of a lifelong education system is a key step to promote the construction of a strong country in education and a learning society, and lifelong education is a comprehensive system that breaks through the limitations of the time and space dimensions of the educated. Whether the public is concerned about "lifelong education", and to what extent, can be interpreted using the trends presented by big data. According to the 52nd Statistical Survey on the Development of China's Internet Network by the China Internet Network Information Center (CNNIC), as of June 2023, the number of Internet users in China is 1.079 billion, and the Internet penetration rate has reached 76.4% (Figure 7) ^[16]. The Internet penetration rate of Chinese netizens has once again set a new record, and the use of the Internet has brought great convenience to people.

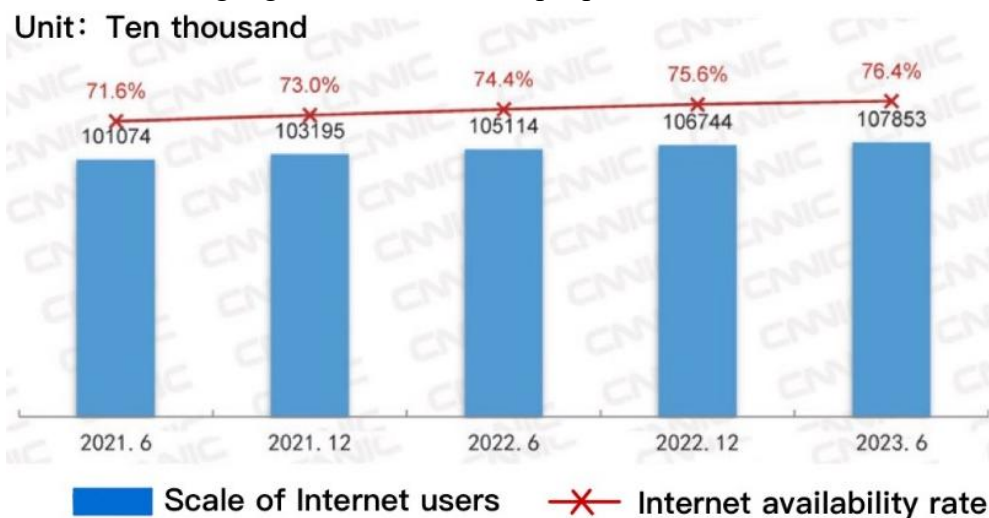


Figure 7. Scale of Internet users and Internet availability rate

Source: <https://www.cnnic.net.cn/n4/2023/0828/c88-10829.html>

In the first half of 2023, the number of search engine users in China reached 841 million, an increase of 4.9% from December 2022 (Table 2).

Table 2. 2022.12-2023.6 Usage rate of various Internet application users and netizens

Source: <https://www.cnnic.net.cn/n4/2023/0828/c88-10829.html>

Application	2022.12 Scale of users (Ten thousand)	2022.12 Usage rate	2023.6 Scale of users (Ten thousand)	2023.6 Usage rate	Growth rate
Instant communication	103,807	97.2%	104,693	97.1%	0.9%
Web video	103,057	96.5%	104,437	96.8%	1.3%
Short video	101,185	94.8%	102,639	95.2%	1.4%
Online payment	91,144	85.4%	94,319	87.5%	3.5%
Online shopping	84,529	79.2%	88,410	82.0%	4.6%
Search engine	80,166	75.1%	84,129	78.0%	4.9%
Network News	78,325	73.4%	78,129	72.4%	-0.3%
Webcast	75,065	70.3%	76,539	71.0%	2.0%
Internet music	68,420	64.1%	72,583	67.3%	6.1%
Internet games	52,168	48.9%	54,974	51.0%	5.4%

In recent years, using Baidu Index scholars have conducted research on Inclusive Education^[11], Children's Mental Health^[12] and Knowledge Management^[13]. However, the application of Baidu index in the field of education is insufficient, and the data traces generated by the keyword search of "lifelong education" have not been paid attention to. This study is the first attempt to explore the public's online behavior towards lifelong education in the past decade, and confirms that the Baidu index can effectively measure the public's attention to lifelong education.

The trend study shows that between July 1, 2013 and November 1, 2023, the search trend for the term "lifelong education" shows both fluctuations characterized as an increase followed by a decrease (Figure 3).

First, the search trend of "lifelong education" showed an upward trend before May 23, 2022 and the overall search trend showed a downward trend after May 23. However, the search index of "lifelong education" was not low. The main reason for the rising trend of "lifelong education" is that since May 20, 2022, the lifelong education platform of the National Open University (le.ouchn.cn) has been officially online and is open to the society free of charge. The platform brings together the self-built learning resources of the National Open University, the course resources of 338 well-known universities, and the special courses of 10 head platforms, totaling 500,000 courses dedicated to meeting the diversified and personalized learning needs of the general public. In August 2020, China's Ministry of Education issued the *Comprehensive Reform Plan for the National Open University (No. 6 Teaching Vocational Training [2020])*, which makes it clear that it is necessary to make the National Open University the main platform for lifelong education in China, the main platform for online education, and the platform for flexible education, and the platform for external cooperation, and to become an important force in the service of lifelong learning for all people, as well as a powerful support for the skills-based society^[17]. According to the results of the 7th National Population Census, as of November 1, 2020, China's population

aged 60 years and above was 268.766 million, accounting for 18.70%. The number of people aged 65 and above was 190.63 million, or 13.50%^[18]. Overall, the aging of China's population continues to deepen, and the trend of aging is irreversible. Driven by the social trend, education for all (EFA), community education and education for the elderly (post-retirement education) all need a platform that can provide learning services^[19]. The construction of an education system that serves lifelong learning for all is a matter of urgency. An education system that serves lifelong learning for all requires "promoting the integrated development of urban and rural compulsory education, improving the guarantee mechanisms for preschool education, special education and universal senior secondary education, and perfecting the mechanism for the integrated and coordinated development of vocational and technical education, higher education and continuing education"^[20]. Lifelong education platform is open to all kinds of publics in the society for free, including students, office workers, retired senior citizens, unemployed people, etc. The wide range of audiences has caused the public to pay more attention to this platform, and in order to clearly understand and utilize the "Lifelong Education Platform", we should first understand what "Lifelong Education" is, so after the free opening of the "Lifelong Education Platform of the National Open University", the trend of searching for the term "lifelong education" has rapidly increased. "

The main reasons for the downward trend of "lifelong education" are: since the free opening of the lifelong education platform of the National Open University on May 20, the construction of a lifelong learning education system for all people has achieved remarkable results. The free opening of the lifelong education platform of the National Open University has provided a generous livelihood dividend for the "Keep studying as long as you live ", and made education more secure in terms of lifelong time, spatial extensiveness, and full range of objects^[21]. The public has utilized the lifelong education platform to obtain more learning resources and promote the development of individual lifelong education, and the public's concern for "lifelong education" has gradually declined as a result of their in-depth or even complete understanding of "lifelong education".

Second, with searches for "lifelong education" showing an increasing trend before June 17, 2023 and the overall trend of the search index for "lifelong education" gradually decreased after June 17. The main reason for the upward trend of "lifelong education" is that on June 17, 2023, the first half of the 2023 College English Test (CET) was held, in which "lifelong education" appeared in the form of translation questions in the CET-4 (Figure 8). The College English Test (CET-4, CET-6) is a single-subject, standardized English test under the supervision of the Department of Higher Education of the Ministry of Education of China, and is currently the largest and most involved English test in China^[22]. The translation questions in the CET-4 focus on testing students' ability to translate the information carried in Chinese in English, which mainly involves Chinese culture, history, economy and social life^[23]. This requires the candidates to deeply understand the meaning of the question in the process of translating the text, to realize the core information carried in the Chinese passage, and then to express it with their knowledge of English. If they do not know the meaning of "lifelong education" before the examination, they can gradually find out the ideology, value and development trend of lifelong education in the process of translation. After the examination, candidates with doubts and curiosity about the question, search for "lifelong education" through Baidu to further learn the specific connotation of "lifelong education". Therefore, the significant increase in the number of searches for the keyword "lifelong education" indicates that candidates have acquired more information about "lifelong education" through the search engine, and more deeply realized the significance of "lifelong education". The meaning of "lifelong education" is more profoundly realized by the candidates. It is not difficult to see that the appearance of questions on "lifelong education" in

a large-scale nationally standardized examination is a sign of the great importance attached by the China Education Examinations Authority, the Ministry of Education and even the country to the construction of a lifelong education system.

Part IV

Translation

(30 minutes)

Directions: For this part, you are allowed 30 minutes to translate a passage from Chinese into English. You should write your answer on *Answer Sheet 2*.

中国越来越重视终身教育，发展继续教育是构建终身教育体系的有效途径。高校作为人才培养的基地，拥有先进的教学理念和优越的教学资源，理应成为继续教育的办学主体。因此，近年来许多高校适应社会需求，加强与用人单位沟通，努力探索一条符合中国国情的继续教育发展新路，以使继续教育在国家发展战略中发挥更大的作用。

Figure 8. June 2023 National College English Test (CET-4) Translation "Lifelong Education"

Source: author's own research

Through further research, it was found that the search trend on PC and mobile devices are the same, but the search frequency on mobile devices is higher than the search frequency on PC. The reason for this result may be that the popularity of the Internet in people's lives is rapidly increasing, while the number of people using mobile phones to access the Internet is also increasing. Search data on mobile phones is the main source of mobile data. According to the 52nd Statistical Report on China's Internet Development published by the China Internet Network Information Center, as of June 2023, the most used Internet access devices are mobile phones, followed by desktop computers, laptops, televisions and tablets(Figure 9), China's mobile Internet users reached 1.076 billion, increasing 11.09 million from December 2022, and the proportion of Internet users using mobile phones to access the Internet was 99.8%, basically unchanged from December 2022(Figure 10).

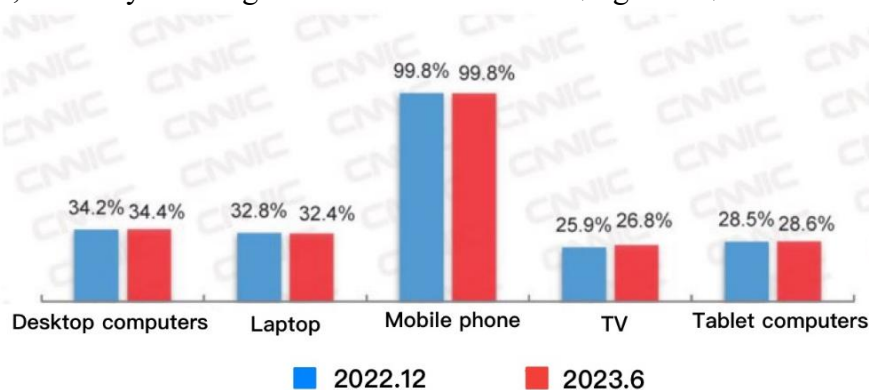


Figure 9. Internet access devices usage

Source: <https://www.cnnic.net.cn/n4/2023/0828/c88-10829.html>

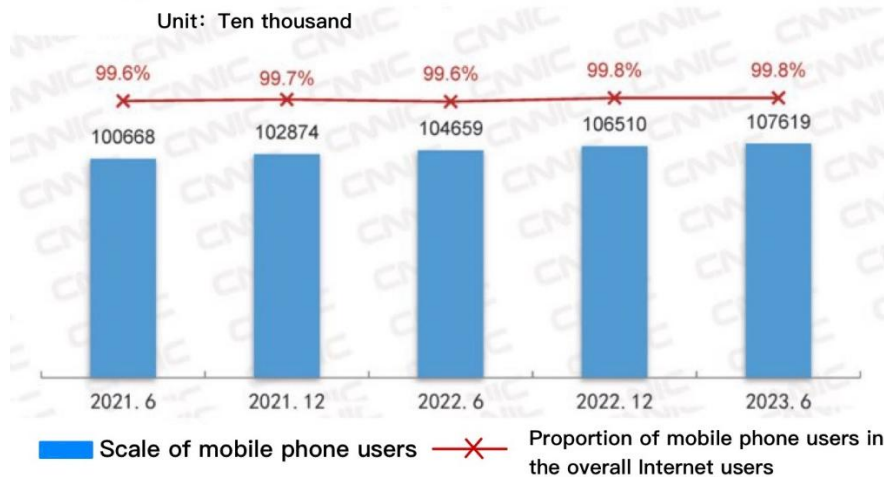


Figure 10. Scale of mobile phone users and proportion in the overall Internet users

Source : <https://www.cnnic.net.cn/n4/2023/0828/c88-10829.html>

The data of demand map in Baidu index can reflect the public's attention to "lifelong education" and the distribution of demand. From the trend study, we can clearly see the peaks, so this study selects the top ten terms with peak search heat to analyze (Table 1). The terms "lifelong education platform" and "lifelong learning" appear most frequently. On the one hand, the "Lifelong Education Platform" is a platform for lifelong learning provided by the National Open University (NOU). On the basis of the Radio and Television University, the National Open University takes the pilot project of "exploring the construction model of the national open university" as a starting point, utilizes the unique advantages of the open education system in terms of integrality and synergy, and aims at constructing a lifelong learning education system for all people^[24]. Therefore, when the "Lifelong Education Platform" is opened for free, the public will pay more attention to it and search for it.

In terms of the geographical distribution of the concerned population, in terms of the ranking of provinces, the first place is China's Shandong Province, followed closely by Guangdong Province (Figure 4). Shandong Province is known as "the hometown of Confucius and Mencius, the state of etiquette", and is one of the birthplaces of the ancient civilization of the Chinese nation. Shandong Province has a large number of celebrities, and the educational ideas of Confucius and Mencius have had a profound impact on future generations. In the National Bureau of Statistics of the People's Republic of China, National data by province yearly data show that in 2021, the number of students enrolled in ordinary high schools in Shandong Province is 1,826,400, and the number of graduates is 539,800, which is the third in the country; at the same time, the number of ordinary institutions of higher education in Shandong Province is 153, which is second to Jiangsu (167), Guangdong (160), Henan (156)^[25]. Scarcity of quality higher education resources in Shandong, Shandong has only three ministries of higher education, six disciplines into the national "First-class universities and disciplines of the world" construction list, the provincial colleges and universities have not even a discipline selected, which has become "the province's higher education of the pain of the skin"^[26]. High-quality university education resources in Shandong Province are not proportional to the number of college entrance examination candidates, which has led to a great deal of public concern about education resources and a large number of searches for the term "lifelong education. In 2022, the Department of Education of Shandong Province issued a circular on the "14th Five-Year Plan for Education Informatization in Shandong Province," advocating the need to actively promote the sharing of digital resources for continuing education by universities and society, promote the construction of lifelong education platforms, deepen the integration of network learning

spaces, effectively utilize integrated media resources, and realize the accurate delivery of learning content based on big data and the monitoring and management of the process of quality, so as to better satisfy the needs of all people for lifelong learning^[27]. The emphasis on lifelong education in Shandong Province has led to greater public participation, and Jinan, the capital city of the province, is one of the first pilot cities for the construction of learning cities is a major reason for the public's interest in lifelong education. In addition, national data from the National Bureau of Statistics of the People's Republic of China shows that in 2021, Guangdong Province's GDP was 124,369.97 billion yuan, and its investment in education was 53,869,000 yuan, the highest in the country. Guangdong Province is one of the earlier regions in China to carry out the practice of lifelong education. Guangdong Province attaches great importance to the development of lifelong education, and has also conducted research and groundwork for lifelong education legislation, and has successively issued a number of policy documents on continuing education, vocational education, community education, and education for the elderly, which have made outstanding contributions to the process of promoting the practice of lifelong education^[28]. With such a policy foundation, and its capital city Guangzhou being one of the first batch of pilot cities for the construction of learning cities, the public in Guangdong is more concerned about lifelong education than in other regions, which is why Guangdong Province ranked second in the index of public searches for "lifelong education".

In the ranking of cities, Beijing is in the first place, followed by Shanghai. In January 2011, the General Office of the State Council issued the *Circular on the Pilot Reform of the National Education System*, which decides to carry out the pilot reform of the national education system in some regions and schools according to the *National Medium and Long-Term Educational Reform and Development Plan (2010-2020)*. The Circular also states that Beijing will be the first city in the list of cities to carry out the pilot reform of the education system. Among them, in order to promote the construction of learning cities, Beijing, Shanghai, Jinan (Shandong Province), and Guangzhou (Guangdong Province) will be the pilot cities^[29]. The two Municipalities directly under the Central Government, Beijing and Shanghai, as pilot cities for the construction of learning cities, have gained unique experience under the great attention and unified leadership of the Party and the government, and have made unprecedented progress in the construction of a lifelong education system, with the initial formation of a city culture in which everyone is eager to learn, and learning can take place everywhere^[30]. Therefore, compared with other cities, Beijing and Shanghai are more concerned about "lifelong education", ranking first and second respectively.

In this study, the social concern data within the last ten years from July 1, 2013 to November 1, 2023 were selected to analyze the population attributes (Figure 5). Analysis of the data shows a gender ratio of 30.28% and 69.72% for men and women respectively, reflecting the fact that women are more concerned than men. In the age distribution, the group with the highest social concern is the group aged 20-29 (51.84%), which represents the younger generation's concern for lifelong education, most of this age group is already working, and a small portion of them are attending school or facing graduation and job searching. at the beginning of 2022, Tencent Marketing Insights (TMI) launched the *"Career" Becomes an Opportunity, "Education" Sees the Future - Tencent 2022 New Vocational Education Insight White Paper* shows that among the six types of typical people in new vocational education, "job-seeking youth" and "happy youth" are motivated by "mastering the 'knocking bricks' of popular jobs" and "searching for new jobs". "and "Finding peers and self-fulfillment."^[31]. The competition of new era makes young people realize that only by constantly improving their knowledge base and learning more skills can they gain a foothold in the competitive society,

and lifelong education emphasizes unlimited learning, so they are particularly concerned about "lifelong education". Therefore, they are particularly concerned about "lifelong education". Secondly, the group with higher social concern is the group of ≤ 19 (18.47%), which is mainly underage students; the group of 30-39 years old follows (17.65%), which represents the concern of some students' parents or the middlemen in the workplace for lifelong education; the group of 40-49 years old is less concerned (8.16%), and the lowest percentage of concern is among those over 50 years old, at only 3.88%.

In addition, the target group index (TGI) can reflect the strength or weakness of the target group within a specific research area (e.g., geographic region, demographic area, media audience, product consumer). The TGI index characterizes the differences in the issues of interest to users with different characteristics. If TGI index is 100, it indicates an average level, and an index higher than 100 means that users in this category have a higher degree of interest in a certain type of issue than the overall level. In the gender distribution, the TGI of women is 141.39, while that of men is 59.73, indicating that female public is more interested in lifelong education related information. Today's society puts higher demands on women, like men, who are indispensable and important roles in life and work, which requires them to seek various effective ways to improve their quality. Zhao Ping (2010) pointed out more than ten years ago that lifelong education is an important way for intellectual women to improve their quality in the 21st century, and that the knowledge economy will make intellectual women's concepts get a comprehensive update, women's sense of subjectivity become stronger, and their self-worth will be realized^[32]. Lifelong education for women is conducive to broadening their horizons, increasing their personal skills and upgrading their professional knowledge, and after acquiring a certain amount of practical skills and knowledge, women will benefit from their own development and will be able to make their due contribution in their workplaces, thus realizing a greater value in life^[33]. As a result, women's interest in "lifelong education" is higher.

Limitations

Using Baidu Index can help researchers get data quickly and easily, however, Baidu Index inevitably has some limitations. First, the data collected by Baidu Index is relatively macroscopic, and the search trend is only based on the search behavior of users in the Baidu search blanks. To understand the reasons behind the behavior and the factors of data changes at a deeper level, a more comprehensive data source and a more detailed statistical analysis are needed. Second, the data source of Baidu Index is the Baidu search engine, and it is only collected for China. Therefore, this study does not evaluate data obtained from other search engines and search behaviors generated by users in other regions. Third, although Baidu Index is able to analyze trend studies, demand map, and user portrait, it is not able to obtain demographic data for the time being. Fourth, Baidu Index collects data by typing in keywords, without analyzing the motivation behind the search behavior^[12]. One part of the search data obtained from the Baidu Index for "lifelong education" may come from groups that really want to know about lifelong education, such as students, office workers, retired elderly people, and non-engaged people, etc. Another part of the data may come from researchers at all levels, teachers and other groups who conduct research on lifelong education platforms, all of whom contribute to the search volume of "lifelong education", which makes it difficult to accurately grasp the group of people who have a real need for lifelong education.

To sum up, although Baidu Index still has a lot of drawbacks that need to be improved and perfected. However, based on Baidu index, we can roughly understand the search heat of the keywords, and then analyze the products, industries, events, and a series of searches behind the keywords represented by the user behavior, user demand, portrait.

5. Conclusions

Baidu index can be used to understand the public's attention to lifelong education. The results of the study show that the change of lifelong education search trend is closely related to the free opening of the lifelong education platform of the National Open University. In terms of gender, women are more inclined to learn about lifelong education. Shandong Province, with its large population, ranks first in terms of lifelong education among all provinces in China, while Beijing, as one of the first pilot learning cities, ranks first in terms of cities. The search volume of "lifelong education platform" related to "lifelong education" is the same as that of "lifelong education", but its daily average search value is higher than that of "lifelong education" and "Lifelong Education".

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