

## Exploring Determinants of Mobile Digital Educational Radio Utilization Among Chinese College Students: Use and Satisfaction

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### Abstract

Educational broadcasting is a broadcasting service specifically used for educational purposes that transmits audio or video content to learners via radio waves or other digital channels, such as the Internet. In the online education market, college students are the main consumer group, so the study of college students' online education behavior has an important guiding effect on the online education market. This study is devoted to exploring the factors that influence Chinese college students' use of mobile digital broadcasting to obtain educational information. Based on the use and satisfaction theory, the research method of in-depth interview is adopted. Through the introduction of informants, a remote online interview was conducted with 10 college students from 5 universities in central China. The research results show that Chinese college students have a high degree of recognition of digital educational broadcasting, which plays an auxiliary role in college students' learning. Information seeking, convenience utility, entertainment and relaxation are their main motivations for using digital educational broadcasting. At the same time, the study also found that college students have a higher demand for the content quality and interactive form of educational broadcasting.

**Keywords:** Digital Radio, Online Education, Online Learning Behavior, User Analytics, Use And Satisfaction Theory

### Introduction

Radio is still a powerful medium of communication because of its wide coverage and ubiquity, and its message content can be received in distant places. It is able to appeal to a large audience because it is relatively cheap and runs without electricity. Therefore, it is considered to be the most accessible technical tool for information dissemination. The study found that radio is the most popular educational broadcasting medium in times of crisis around the world. This is because it is relatively cheap and easily available (Okeke, Nwosu & Ono, 2020).

Radio is a public communication space that facilitates communication and personal interaction with its audience, and now with the development of the digital environment, this possibility is further expanded (Martinez-Costa & Prata, 2017).

Radio affects the lives of people of all ages in many ways, and radio plays an important role in informing, educating, and enlightening everyday public life, especially in public education, where educational community radio promotes learning and provides a variety of information on issues to moderate viewers to make informed decisions (Grise, 1974). Radio, as one of the mass media, has its role as a social institution that educates citizens (Sujoko, Rahmiati & Rahman, 2023). The benefits found through radio instruction are enormous. Radio has the potential to reach large or underserved populations and deliver information effectively, making it a powerful medium for delivering content (O'Shea & Richmond, 2007).

Radio has been used for educational purposes since the early 1920s; In any case, the application of radio to educational problems in developing countries is not a new concept. By using materials specifically designed for broadcast use rather than applying modified scripts for other media, the great gains of learning shown in broadcast courses can be further enhanced (Rahman & Khan, 2017). Distance learning solutions include platforms, educational apps, and resources designed to help parents, students, and teachers. Digital learning management system, massive open online course platform and self-directed learning content (Tadesse & Muluye, 2020).

At the beginning of the 21st century, the way listeners receive music and information has fundamentally changed. Young people in particular think radio is outdated. They prefer to listen to music or get news and information through portable music players and the Internet. Since the beginning of the new century, there have been obvious changes from AM broadcasting to FM broadcasting. The audience for long -, medium - and short-wave broadcasts continues to decline. The fact that many international broadcasters have stopped their shortwave broadcasts, however, does not mean that radio has finally been eclipsed. Radio has simply done what it did in the face of the advent of television in the 1950s: adapt to survive. Broadcasting has evolved from linear broadcasting on one device to unique audio content delivered across multiple platforms. Emerging technologies such as satellites, digital broadcasting and the Internet offer a multi-platform future for radio stations. With the proliferation of digital radio formats, listeners will enjoy a wealth of new programming (Bathgate, 2020).

With the digital age, scholars like Hendy (2013) have discussed the evolution of radio broadcasting, with an emphasis on Digital Audio Broadcasting (DAB) and its implications for traditional FM/AM platforms. These digital shifts have not only affected transmission quality but also enabled greater interactivity and multi-platform engagement (Starkey, 2013). In contrast to the continuous signal transmission in traditional analog broadcasting, digital broadcasting uses a variety of coding and multiplexing technologies to transmit signals, it has a more attractive and strongly realistic visual and sound experience, it can also transmit more programs at the same time, and more importantly, achieve two-way transmission in the program (Gohara & Takayama, 2018).

Distributing audio is not only about sharing knowledge, it can also be a business activity (Wake & Bahfen, 2016). Research shows that compared with other groups, college students have higher willingness to pay for online virtual products and good paying habits (Zhang & Ouyang, 2022). With the development of modern science and technology, online education has become one of the important educational methods in the world today, and online education is a beneficial supplement to offline education (Zhou & Liu, 2023). According to

data released by the Ministry of Education of the People's Republic of China (2022), the total number of students in China has reached 44.3 million. Therefore, the exploration of college students listening to the educational content of mobile digital radio in this study is helpful to enrich the channels for students to acquire knowledge and improve the learning efficiency. At the same time, it also provides reference opinions for the audience analysis of China's digital broadcasting market.

### **Literature Review**

#### *Uses and Gratifications Theory (U&G)*

U&G is a communication theory that holds that media audiences are active participants in the process of media consumption and that they use media to satisfy their own needs and desires (Okpeki et al., 2023). U&G theory was first developed in the research of radio communication and has been widely used in the field of mass communication research (Gan & Li, 2018). It aims to identify the social and psychological motivations that drive individuals' use of particular media (Leung & Wei, 2000).

Use and Satisfaction (U&G) is a media usage paradigm in mass communication research that guides the assessment of consumers' motivations for using and accessing media (Katz, Blumler & Gurevitch, 1973). It reflects a desire to understand audience engagement in mass communication from a perspective that is more faithful to the user's personal experience and perspective than traditional effects (Blumler, 1979). In the initial stages of each new mass communication medium, such as newspapers, radio and television, and now the Internet, use and gratification have always provided a cutting-edge theoretical approach (Ruggiero, 2000). In the era of mobile Internet, radio consumption in China shows an obvious trend of diversification in terms of audience, media and content, and the content differentiation among different listeners is obvious, and the age stratification is also obvious, showing obvious personalized needs. In order to meet the consumption needs of listeners at different levels, modern broadcasters should carefully divide audio channels. Understand the audience's hobbies and requirements, and personalize different radio programs (Ruan,2020) .

### **Methods**

This study is a qualitative study, which can be broadly defined as a naturalistic inquiry that seeks to understand and explore rather than explain and manipulate variables. It is contextualized and interpretative, emphasizing the process or pattern of development rather than the product or result of research (Nassaji, 2020). The purpose of qualitative research is to discover meaning based on human experience (Sandelowski, 2004). This study aims to explore the influencing factors of college students' use of mobile radio to obtain educational information.

This study uses purposeful sampling to select samples, and researchers intentionally select participants who have some knowledge of the phenomenon being studied, which is cost-effective and diversified in strategies (Gill, 2020). The goal of qualitative sampling is to recruit enough participants or provide observations of rich, in-depth data in order to understand the phenomenon under study (Hennink et al., 2019). "Sample size in qualitative research may refer to numbers of persons, but also to numbers of interviews and observations conducted or numbers of events sampled" (Sandelowski, 1995, p. 180). Sample size must be sufficient to generate quality data that provides a rich understanding of the experience (Sandelowski, 1995).

Considered a rigorous cornerstone for determining sample sizes in qualitative studies, Hennink and Kaiser (2022) describe a series of methods for assessing saturation that demonstrate that it can be achieved through small interviews (9-17) or focus group discussions (4-8). This is especially true in studies where the study population is relatively homogeneous and the target is narrowly defined. In this study, 10 students who listened to the radio on mobile phones were selected as interview subjects through informants (university teachers) in 5 universities in central China. Interviews ranged from 30 minutes to 1 hour, and data was collected through in-depth interviews conducted online (Tencent conference/wechat video). The main benefit of semi-structured interviews is that they allow the interviews to be focused while still giving the investigator autonomy to explore relevant ideas that may arise during the interviews (Adeoye-Olatunde & Olenik, 2021).

Participants shared information about their use of digital broadcasts to gain knowledge, and each interview was recorded and then transcribed into a text message. The researchers coded all the interviews independently and then compared the encoded data. Interview data is encoded by finding use or satisfaction for digital educational broadcasting.

## Results

The methodology of in-depth interviews provided a rich, qualitative understanding of the participants' experiences. Through purposeful sampling, the study captured the perspectives of ten college students, offering a snapshot of the listening behaviors and preferences within this demographic. The interviews revealed that mobile phones are the primary device for accessing educational radio, signifying a trend towards mobile learning. Furthermore, the gender difference in listening duration points to nuanced differences that merit further examination.

This study encompassed a cohort of ten college students, offering a microcosm of the broader student community with diverse backgrounds and experiences. Age-wise, they ranged between 18 and 22 years, capturing the typical undergraduate age group. From Figure 1, we can find that all the subjects in the study listen to the radio with mobile phones, and some of them also use computers and ipads, indicating that mobile phones are certainly the most important medium for college students to listen to the radio. From the weekly listening time, it can be found that the weekly listening time of girls is 10.4 hours, and the weekly listening time of boys is 8.3 hours, which indicates that girls are higher than boys in the degree of educational broadcasting.

Figure 1: Basic information of the interviewee

interviewee	Gender	Age	Radio hours per week (hour)	Use equipment
ZB	Male	21	10	Phone
DHD	Female	22	7	Phone, Computer
CR	Female	22	8	Phone
CGR	Female	21	14	Phone, Computer
WZY	Female	18	10	Phone
LDY	Female	22	10	Phone, Computer
LYJ	Female	21	12	Phone, Computer, Ipad
LZY	Male	21	10	Phone, Computer
SJW	Female	21	12	Phone
ZPH	Male	18	5	Phone, Computer

The data revealed participants' main motivations for listening to educational radio, with information seeking, convenience utility, relaxation and entertainment emerging as the most prominent themes.

### *Information seeking*

The data showed that all participants claimed that they used the radio to acquire the knowledge they needed. These participants purposefully chose to listen to knowledge related to their chosen subject in order to improve their professional skills, especially when faced with exams, they hoped to improve their test scores through additional knowledge acquisition.

*DHD: I often turn on my mobile phone and listen to the radio when there is no class, and when I come across a course I like, I want to learn more about the professional knowledge of the subject, which I feel will be helpful to my major. I may listen more in the final period, because we have a lot of courses, so I want to use these fragmented time to review and consolidate.*

DHD, like other participants, listened to educational broadcasts initially to gain knowledge or improve skills. When these broadcasts information, which is constantly in their ears, can increase their knowledge base without them realizing it. So 2 weeks before each exam weeks before each exam, she would appropriately increase the time spent listening to the radio. Compared with the traditional fixed learning content on campus, the radio can provide a richer learning resource. It's not just about studying, but also about life skills. For example, language learning.

*CGR: My favorite thing about listening to language learning radio content is firstly because I am very interested in English and Korean, which are non-native languages, and I often watch Korean and American dramas in my free time. The second reason is that I don't have much confidence in my second language and I would like to improve my English by listening to language radio, and I would really like to be able to travel to these two places and talk freely with the locals.*

In addition to CGR, WZY, LDY and ZPH also expressed strong interest in language learning and hoped that listening to the radio would help them in some. They hoped that listening to the radio would help them to learn a foreign language. Meanwhile, historical knowledge and popular science lectures were also the participants' favorite. The participants also preferred to listen to historical knowledge and lectures on science and technology.

### *Convenience utility*

Another theme evident in the data relates to the convenience of using radio listening to access learning content. Modern smartphones can be used not only to listen to the radio, but also to browse the web, access information, communicate with others, etc., making learning more efficient. Convenience utility refers to the fact that students can listen to the radio by using their cell phones in a way that is not constrained by time and space, and they can make better use of the fragmented time to study, such as when waiting for the bus or standing in line. At the same time, digital radio also brings richer learning resources to students. Some professional radio APPs provide rich audio resources and are very easy to use.

*LDY: Nowadays, almost all students are using smart phones, and it can be said that almost our daily life has been inseparable from the cell phone, some professional broadcasting apps on the phone, such as XIMALAYA FM, which is very rich in digital resources, we can use it at any time and any place, especially when you are doing something that takes a*

*long time and can't be left behind, for example, when we wait for the bus, or when we run, as long as we put on the headset can be carried out to take advantage of the fragmentation of time to consolidate the definitions of a professional term or to memorize a few words of a foreign language.*

Other participants also said that radio is more convenient than other media, and students can choose and subscribe to specific educational channels or programs according to their interests. CGR said, "Mobile phone radio can send me the resources we want to learn, or similar channels.

*CGR said, "Mobile phone radio can send me the resources we want to learn or similar channels, which saves me a lot of time in searching, and compared with traditional educational resources, the content of radio is updated more quickly. Compared with traditional educational resources, radio content is updated more quickly, reflecting the latest academic research and information in a timely manner. Moreover, many broadcasting applications allow users to download or cache programs. allow users to download or cache programs, so I can play back and learn without Internet access, or listen to a certain part of the content over and over again to deepen my understanding. content to deepen my understanding."*

The use of cell phones by college students to listen to educational broadcasts provides them with a convenient, flexible and personalized learning tool, which helps to improve their learning efficiency and broaden their knowledge. It helps to improve learning efficiency and broaden knowledge.

#### 4.3 Entertainment and Relaxation

Participants also said they did not just listen to the radio for information, but also for entertainment and relaxation. For the participants, a moderate amount of entertainment and relaxation helps them to maintain the enthusiasm and pleasure of learning.

*LZY: Whenever I am bored and do not want to study, I choose to listen to some favorite music quietly, because sometimes if I study for a long time, my head will often feel dizzy and tired. At this time, if I choose some relaxing music or listen to novels, I will better adjust my learning state.*

LYJ said she also likes to listen to music to relax her mind when she is tired from studying. In addition to listening to music, radio also brings a wealth of audio novels, historical stories and interesting science knowledge. Although these entertainment methods are simple, they can relieve the exhaustion caused by study in the fastest time. For DHD, listening to the radio is also a more important role is to help sleep.

*DHD: I also have a habit of listening to the radio before going to bed, because now students generally like to stay up late, sometimes under the influence of other students, they fall asleep late, and they get used to going to bed late after a long time, but this is not a phenomenon, so sometimes I will listen to the radio to fall asleep, because listening to music or stories when I close my eyes will make me very relaxed. It's also easier to fall asleep.*

In addition, the researchers also found an interesting theme, that is, participants can also listen to the radio as a way to relieve employment and test stress. ZPH said that now there are too many graduates in China every year, and it is difficult to find the desired job, so many students take the entrance exam, which also leads to the number of students increasing year by year, so the entrance exam is becoming more difficult, so I often listen to the program of Zhang Xuefeng, a famous education expert on the Internet. He can rationally and objectively

analyze the current employment and postgraduate entrance examination form, which can help me better plan my future life path.

Finally, the participants said that the interactive nature of educational broadcasting was insufficient. Even if they could leave a message, the creators of the works could not reply to the communication in a timely manner, and they could not consult the teachers in a timely manner if they did not understand the problems encountered in the process of listening. At the same time, the participants also pointed out that the content quality of educational broadcasting programs is too large, although there are many lectures by famous teachers, but there are also many poor-quality programs, and they hope that broadcasters can strengthen the screening of program quality.

*LZY: Sometimes I want to try to listen to the knowledge of other subjects, but I think some professional knowledge sounds difficult. I have listened to some programs of psychology before, but I feel that I still cannot understand some ideas thoroughly. Listening to the radio cannot ask the teacher for help in time as in offline classes.*

SJW also mentioned that not being able to communicate with publishers is also one of the regrets of using educational broadcasting. CR and CGR raised some concerns about the content quality of mobile broadcasting.

*CR: Even though we can easily use our mobile phones to find the topics I want to be interested in from the radio APP, some of the content quality is really bad, the sound quality is not clear, the editing is very simple, and sometimes the soundtrack feels like it is completely forced together.*

As is shown in the above interview, the satisfaction that Chinese college students seek when listening to digital educational radio is usually information seeking, convenience utility, entertainment and relaxation. However, through the in-depth interview, it is also found that today's college students have more accurate demands on the content and communication effect of educational broadcasting.

## **Discussion**

### *Integration of Findings with Uses and Gratifications Theory*

The empirical data from the current study offers a nuanced understanding of Chinese college students' engagement with mobile digital educational radio. Consistent with the Uses and Gratifications Theory (U&G), the findings reveal that students actively select this medium to fulfill specific needs. The motivations of information seeking, convenience, relaxation, and entertainment underscore the multifaceted gratifications sought by this cohort.

Information seeking emerged as a predominant motivation, corroborating Katz, Blumler, & Gurevitch's (1973) assertions within U&G that audiences are not passive recipients but active seekers of media that meets their needs. This proactive behavior is particularly poignant in the context of academic enhancement and exam preparation, suggesting that mobile digital educational radio is not merely a source of passive learning but a strategic tool for academic advancement.

### *Comparison with Literature*

The gender disparity in listening duration, with females engaging more than males, diverges from Zhang & Ouyang's (2022) findings, which did not report a significant gender difference in media consumption habits among college students. This divergence could be indicative of the unique contextual factors influencing Chinese female students' educational media engagement or reflect an emerging trend that warrants further investigation.

The convenience of mobile platforms aligns with Tadesse & Muluye's (2020) observation that digital learning management systems and educational apps are becoming increasingly prevalent in educational settings. This convenience, coupled with the ability to multitask, may explain the high utilization of mobile devices for educational radio consumption, as found in the current study.

#### *Implications for Educational Strategies*

The insights gathered suggest that educational broadcasters and app developers should consider the diverse needs of their student audience. Programs tailored to the academic calendar, particularly exam periods, could enhance the educational value of broadcasts. Furthermore, the preference for mobile access highlights the importance of optimizing content for mobile platforms, ensuring accessibility and user-friendly interfaces for the target demographic.

The preference for language learning content, as expressed by participant CGR, points to a broader trend of using radio for practical skill acquisition. This implies that broadcasters should not only focus on academic content but also incorporate life skills and language learning, which are evidently in demand.

#### *Limitations*

This study is limited by its small sample size and the specificity of the participant group, which may not be representative of the broader population of Chinese college students. The qualitative nature of the research restricts the generalizability of the findings, although it provides depth and context to the individual experiences of the participants.

#### *Suggestions for Future Research*

Future studies could benefit from a larger, more diverse sample that includes students from different regions and academic disciplines. Quantitative methods could complement this qualitative study to assess the prevalence of the identified motivations and behaviors in a larger population. Additionally, longitudinal research could track changes in media consumption patterns as digital education evolves.

#### **Conclusion**

The exploration of Chinese college students' engagement with mobile digital educational radio has yielded insights that extend beyond mere academic curiosity. This study, grounded in the Uses and Gratifications Theory, has uncovered the intricate layers of students' motivations and the practicalities of their media consumption habits. The findings illustrate that students are not passive receivers of educational content but active seekers of information that serves their academic and personal development goals.

The study's results highlight the importance of information seeking, convenience, and the desire for relaxation and entertainment as key drivers behind students' use of educational radio. These findings have practical implications for educational broadcasters, suggesting a need for content that is both academically rigorous and engaging. The data also indicate that educational content providers should consider the timing of their broadcasts to align with students' academic schedules, particularly during periods of heightened academic pressure. This research has some limitations, including a small sample size and a narrow demographic focus, which may affect the generalizability of the findings. The qualitative approach, while in-depth, does not allow for statistical analysis of the data. Future research could employ a



mixed-methods approach to corroborate these findings with quantitative data and expand the sample to include a wider range of participants from different regions and academic disciplines.

The conclusion of this study is not the end, but rather a continuation of a broader conversation about the evolving landscape of education in the digital age. As technology continues to permeate every aspect of our lives, it is imperative that educational tools keep pace with the changing needs of learners. This study contributes to the ongoing dialogue about how best to harness the power of digital media for educational purposes, providing a foundation for future research and development in the field of educational broadcasting.

Mobile digital educational radio presents a unique opportunity to enhance the learning experience for students in China and beyond. By understanding and catering to the diverse needs of this audience, educational broadcasters can not only enrich the academic lives of students but also play a role in shaping the future of education.

This research makes valuable contributions both theoretically and contextually within the realm of mobile digital educational radio and the behavior of Chinese college students. Theoretically, the study aligns with the Uses and Gratifications Theory (U&G), providing empirical evidence that supports the theory's core tenet that media audiences are active participants seeking to fulfill specific needs. The findings, rooted in U&G, shed light on the multifaceted motivations driving college students to engage with mobile digital educational radio, emphasizing information seeking, convenience, relaxation, and entertainment. Moreover, the research offers a nuanced understanding of the interactive nature of educational broadcasting, pointing out the insufficient communication channels for students and the need for enhanced content quality. In the broader context of Chinese higher education, this study provides insights into the evolving preferences and habits of college students, particularly in the digital age. By exploring the factors influencing students' utilization of mobile educational radio, the research aids educational broadcasters, app developers, and policymakers in tailoring strategies to meet the dynamic needs of students, thus contributing to the ongoing discourse on the intersection of technology and education in China and beyond.

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