

# Characteristics and Problem Identification of Interactivity in Online Vocal Education

Zeng Ming<sup>1)\*</sup>

<sup>1)</sup>Department of Music, Zhaoqing University

Xinghu Blvd, Duanzhou District, Zhaoqing, Guangdong Province, China

<sup>1)</sup>evazeng411@foxmail.com

---

Article Track Record:

Submit 19 November 2024;  
Revision 3 December 2024;  
Accepted 5 December 2024;  
Available Online 6 December 2024

---

Keyword:

Online Vocal Education  
SWOT  
Vocal Online Classroom  
Vocal Music  
Interactivity

**Abstrak**

In recent years, the rapid development of Internet technology has significantly transformed the landscape of education, particularly in the field of vocal training. Online vocal education, once a niche offering, has gained substantial traction as a viable alternative to traditional face-to-face teaching. This shift was particularly pronounced during the COVID-19 pandemic, when in-person vocal lessons were largely replaced by online platforms. The adoption of online vocal education has surged due to its inherent advantages, such as convenience, flexibility, and the ability to share resources across diverse geographical locations. These advantages have made online learning an appealing option for both teachers and students alike. However, despite its benefits, online vocal education presents several challenges, particularly in terms of interactivity. This article utilizes a SWOT analysis to examine the strengths, weaknesses, opportunities, and threats associated with online vocal classrooms. The analysis reveals that while online vocal education allows for greater accessibility and resource sharing, it also faces limitations in terms of real-time feedback, student-teacher interaction, and the difficulty of providing personalized instruction in a virtual setting. The lack of physical presence can hinder non-verbal communication cues that are often crucial in vocal training. Additionally, issues such as technological barriers, internet connectivity, and the potential for distractions in a home environment can negatively impact the learning experience. In conclusion, online vocal education offers promising opportunities for expanding access to quality vocal training, but it also requires further innovations to enhance its interactivity. Addressing these challenges could pave the way for more effective online learning models, making it a more seamless and rewarding experience for vocal students and educators.

---

## I. INTRODUCTION

With the rapid development of Internet technology (Pratama et al., 2019), online vocal education has become one of the important ways for vocal learners to acquire knowledge and skills (Chang, 2022). The traditional vocal teaching mode mainly relies on offline classrooms, where teachers and students communicate face-to-face and improve students' singing skills through live singing and improvisational guidance. However, with the continuous advancement and popularization of information technology, online vocal education has begun to emerge and gradually become an

emerging educational model. Especially during the three-year epidemic period, face-to-face teaching was restricted, and vocal teaching was forced to shift from traditional offline classrooms to online teaching models, which greatly promoted the development and popularization of online vocal education.

Online vocal education has gradually gained popularity among teachers and students due to its convenience, flexibility, and resource sharing advantages (Lan, 2022). Students can learn anytime and anywhere through online platforms, without being limited by time and location; Teachers can also interact and communicate with more students through online classrooms, breaking down geographical limitations (Culduz, 2024). At the same time, the abundant teaching resources and diverse teaching content on online platforms provide students with a broader learning space and more learning choices. However, although online vocal education has partly addressed some limitations of traditional vocal teaching, there are still some characteristics and problems in terms of interactivity that urgently need to be explored and resolved (Martínez Hernández, 2021). This article is based on the SWOT analysis method to comprehensively analyze the advantages and disadvantages of interactivity in vocal online classrooms, and deeply explore the characteristics and problems of interactivity in online vocal education.

SWOT analysis method, also known as dynamic analysis method, refers to arranging the strengths, weaknesses, opportunities, and threats of the research object in a matrix form through investigation, and then using systematic analysis method to analyze and study each factor, in order to seek corresponding conclusions (Puyt et al., 2023). Strengths refers to the positive factors that a company, project, or individual possesses in competition, such as technological leadership, high market share, and high brand awareness, which help to enhance competitiveness and market share. Weaknesses refers to negative factors that hinder the achievement of goals, such as outdated technology, poor management, and funding shortages. Identifying and improving disadvantages can enhance overall competitiveness. Opportunities are positive factors in the external environment, such as market demand growth and policy support. Seizing opportunities can bring greater development space to enterprises. Threats are negative factors in the external environment, such as intensified market competition and changes in the economic environment. Understanding and responding to threats can reduce risks and maintain the stable development of enterprises (Sarsby, 2016).

## II. LITERATURE REVIEW

In the mode of Internet+ vocal music education, the rapid and effective integration of vocal music teaching resources can be achieved by relying on network technology, the scientific and personalized means of vocal music teaching can be achieved, and the harmony and interaction of the vocal music teaching environment can be achieved (Ping, 2020). Online teaching enables students at all stages to complete teaching tasks according to their learning progress without leaving their homes (Dhawan, 2020). Secondly, Internet education is not restricted by regions. It can effectively manage and use the fragmented time, promote the balanced allocation of educational resources, narrow the regional and inter school gaps in educational levels, and achieve balanced and equitable development of educational levels and resource allocation among regions (Das et al., 2021). Once again, it can promote the intelligence of educational management, facilitate personalized curriculum design, and facilitate the sharing of educational resources. Its open educational model and flexible teaching methods greatly stimulate students' learning enthusiasm and initiative. It can provide efficient and intelligent technical support, and use intelligent marking, learning analysis, AR/VR and other technologies to make intelligent Internet

education have considerable flexibility and effectiveness in teaching content and teaching process (Juan, 2021). The emergence of the Internet has provided students with more teaching resources, which can transfer teaching knowledge at any time without the restrictions of geographical space, and greatly enriched the practical channels of students' vocal knowledge. Through the teaching form of the Internet, teachers can more easily conduct targeted guidance and analysis for different students' basic abilities and learning potential, so as to truly implement the vocal music education of teaching students in accordance with their aptitude. Being able to enable students to practice anytime and anywhere can help them learn various vocal techniques mastered by famous teachers from all over the country, broaden their horizons, and achieve efficient vocal learning results. Making it more convenient for students to access information can broaden their horizons, and students can interact with some excellent music netizens and even share resources with them. While improving resource utilization, one can also enhance their vocal skills through mutual learning (Zhilin, 2020).

### III. RESEARCH METHODS

#### Strengths

##### a. Convenience

- **Convenient interaction and communication**

Online vocal education platforms usually have real-time interaction and communication functions, such as online chat, forum discussion, and work display, which provide convenience for communication and exchange between students and teachers. Students can use these functions to seek advice from teachers, share their learning experiences, and showcase their learning outcomes. Teachers can also promptly answer students' questions, provide guidance and suggestions, and understand their learning situation. This convenient interaction and communication help to increase students' participation and learning effectiveness, and promote a good relationship between teachers and students.

- **Personalized Learning Path**

Online vocal education platforms usually support students to choose their learning path based on their own learning characteristics and interests. Students can choose different learning modules and difficulty levels based on their basic level and goal needs for targeted learning. At the same time, students can also independently adjust their study plans and pace according to their own learning progress and schedule. This personalized learning path helps to meet the different needs of students, improve learning outcomes and satisfaction.

- **Reduction of Learning Costs**

Compared to traditional offline vocal education, the learning cost of online vocal education is relatively lower. Students do not need to bear high tuition and transportation costs, nor do they need to worry about time and location restrictions. In addition, online vocal education platforms usually provide some free or low-cost learning resources and services, allowing more students to have the opportunity to access and learn vocal knowledge.

"Micro class" is a kind of teaching method that uses Internet information technology as a medium to fragment knowledge, and is the product of "Internet plus education". The characteristic of micro lessons is that they are relatively short, usually only 5-8 minutes. The forms of presentation generally include audio, video, images, and other content. In a short period of micro lessons, it is possible to cover key and difficult points, as well as questioning points in teaching, with novel forms, rich knowledge points, and strong versatility, which has a certain positive effect on improving the effectiveness of vocal teaching. Firstly, a short teaching time is more likely to

attract students' attention and encourage them to actively participate in learning. Due to the short duration of micro lessons, they can also provide some help in terms of learning motivation and subjective initiative for students who cannot concentrate for a long time. Secondly, micro lessons have strong targeting, with each micro lesson only imparting one knowledge point, making it easier for students to grasp the essence of knowledge and obtain teaching focus. Thirdly, micro lessons have the characteristic of portability. Teachers can copy the micro lesson courseware to students or send it to their email, multimedia contact group chat, etc. Students can use electronic devices to learn, consolidate, and deepen their knowledge anytime and anywhere according to their own situation. In addition, teachers can also guide students to practice making micro lessons on their own. Through micro lesson production, students can not only review, consolidate, and deepen their understanding of vocal knowledge, but also exercise their ability to utilize and integrate knowledge while constantly expanding new knowledge.

## **b. Flexibility**

### **• Flexibility of Vocal Teaching Content**

The teaching content of online vocal classes has great flexibility. Traditional vocal classes are limited by factors such as textbooks and teaching resources, and the teaching content is often relatively fixed. However, the online vocal music class can make full use of the resource advantages of the Internet to select appropriate materials from a large number of music works, making the teaching content more diverse. In addition, online vocal classes can also tailor personalized learning plans based on learners' needs and interests to meet the learning needs of different learners.

### **• Flexibility of Teaching Methods**

The online vocal classroom has also shown significant flexibility in teaching methods. Traditional vocal classes usually adopt face-to-face teaching methods, while online vocal classes can use various technological means such as multimedia, online live streaming, and interactive teaching to provide learners with richer and more diverse learning experiences. For example, teachers can use online live streaming platforms for real-time teaching, and learners can watch and participate in interactions online; Meanwhile, teachers can also utilize recorded courses, instructional videos, and other resources for learners to engage in self-directed learning anytime, anywhere.

### **• Flexibility of Learning Time and Space**

Online vocal classes also have great flexibility in terms of learning time and space. Traditional vocal classes usually require teaching at fixed times and locations, while online vocal classes break this limitation. Students are not limited by time and location, and can learn at their own pace by revisiting recorded lectures and listening to teachers' explanations. Resources can be reviewed repeatedly, making teaching practice more diverse and flexible.

In recent years, with the development of WeChat, this social software has gradually extended globally and become an essential communication tool for many people's lives and work. The invention of WeChat not only allows free dissemination of text, images, videos, voice messages, transfers, and other information, but also has the functions of calling and video voice communication. With its convenient information dissemination, wide influence, strong interactivity, and low cost, WeChat, a social software, has quickly become popular among the public. With the popularization of electronic devices, many teachers have used WeChat to build after-school interactive systems, and WeChat has also begun to be applied in the teaching field. Through WeChat, teachers can communicate and interact with students at any time, answer their questions, test their learning effectiveness, share vocal teaching videos with students, help them

solve learning difficulties in a timely manner, and improve their academic performance. Teachers can also establish a class WeChat group for teacher-student interaction and student-student interaction, exchanging information anytime and anywhere, and promoting the improvement of students' vocal knowledge and abilities through communication. In addition, many vocal music art organizations in China have WeChat official account, which regularly release some vocal music skills, international cutting-edge vocal music information, etc. By paying attention to this official account, students can not only learn vocal music knowledge, but also learn about the development of this field at the first time, broaden their horizons, and provide a strong reference for future employment and further education.

### **c. Richness**

#### **• Rich and diverse content**

The online vocal classroom resources cover various aspects from basic knowledge to advanced skills. Both beginners and learners with a certain foundation can find learning resources that are suitable for themselves. These resources include various aspects such as vocal theory, vocal techniques, and song practice, in diverse forms, including written materials, video tutorials, and interactive online courses.

#### **• Diversified learning methods**

Learners can learn anytime, anywhere according to their own schedule. Whether at home, on the road, or anywhere else, as long as there is an internet connection, learning can be conducted. Meanwhile, learners can freely choose learning resources and methods based on their own learning progress and needs.

### **Weakness**

#### **a. Technical Dependence**

##### **• Instability of Technical Equipment**

Network transmission has the characteristics of delay, blockage, and instability, which often lead to interruptions, poor signals, and other problems during classroom teaching, seriously affecting teaching effectiveness. The hardware models and qualities of the devices vary, and there are differences in the system compatibility of the teaching software. During online teaching, interruptions caused by software and hardware failures are prone to occur.

##### **• Difficulty in controlling teaching quality**

In online vocal classes, it is difficult for teachers to instantly grasp students' learning status and effectiveness like face-to-face teaching. Due to the lack of face-to-face communication and observation, teachers find it difficult to accurately evaluate students' vocal skills and performance abilities, and cannot promptly identify and correct problems that students encounter during the singing process. This may lead to difficulty in controlling the quality of teaching and affect students' learning outcomes.

##### **• Difficulty in creating classroom atmosphere**

Vocal teaching requires a good classroom atmosphere to stimulate students' interest and enthusiasm for learning. However, it is often difficult to create such an atmosphere in online vocal classes. Due to the lack of face-to-face communication and interaction, students may feel that the classroom lacks vitality and interest, making it difficult to fully immerse themselves in learning.

#### **b. Lack of interactivity**

##### **• Communication barriers**

One of the biggest disadvantages of online vocal classes is communication barriers. Although modern communication technology has become quite advanced, online communication still cannot completely replace face-to-face communication. In vocal teaching, teachers need to

provide real-time guidance and correction on students' pronunciation, breath, resonance, etc. However, communication in the online environment often suffers from delays, unstable signals, and other issues, making it difficult for teachers to obtain timely and accurate feedback from students, as well as provide effective real-time guidance to students.

- **Lack of emotional communication**

Vocal teaching is not only about imparting skills, but also about conveying and expressing emotions. In traditional face-to-face vocal classes, teachers can engage in emotional communication with students through facial expressions, body language, etc., thereby stimulating students' interest and enthusiasm for learning. However, in online vocal classes, emotional communication between teachers and students is greatly limited. Although teachers can interact with students through text, voice, video, and other means, these methods often cannot fully convey the teacher's emotions and attitudes, nor can they create a lively and dynamic classroom atmosphere.

- **Limited practical opportunities**

Vocal learning requires a lot of practical and performance opportunities to enhance students' skills and confidence. However, in online vocal classes, students often lack sufficient practical opportunities. Although some online vocal classes may arrange practical activities such as online performances or recording assignments, these activities often cannot completely replace real stage performances and live interactions.

- **Lack of personalized guidance**

Each student has different vocal conditions and abilities, so personalized guidance and teaching are needed based on their individual characteristics. However, in online vocal classes, due to communication barriers and insufficient supervision, teachers often find it difficult to provide personalized guidance to students. This may result in some students being unable to acquire suitable learning methods and skills, thereby affecting their learning effectiveness and progress speed.

**c. High requirements for self-discipline in learning**

- **Lack of face-to-face supervision and interaction**

Teachers are unable to synchronize and control the learning status and acceptance level of all students in a short period of time, and textual classroom messages and voice feedback have a significant impact on teaching. The lack of feedback from students' learning results in teachers being unable to timely identify difficult and doubtful points in teaching content, and adjust teaching methods and progress accordingly. For students with poor learning awareness, teachers find it difficult to timely grasp their online learning status.

- **There are many interfering factors in the learning environment**

The learning environment of online vocal classes is more flexible compared to traditional classrooms, but at the same time, there are also more interfering factors. When students learn vocal music at home or in other non professional learning environments, they are easily distracted by factors such as family, pets, and television, making it difficult for them to concentrate. The fragmentation of learning time leads to the fragmentation of students' knowledge acquisition and logical thinking, lacking systematic guidance and forging of holistic thinking, which is extremely detrimental to students' ability to form a complete knowledge system and deep thinking.

- **Difficulty in controlling course schedule and progress**

The course schedule and progress of online vocal classes often depend on students' self-awareness. Students need to arrange their study time independently and keep track of their learning progress. However, students with poor self-discipline may not be able to effectively

manage their study time, resulting in delayed course progress and even inability to complete learning tasks. In addition, although there are abundant learning resources in online vocal classes, students also need to have certain abilities in information screening and integration, which puts higher demands on their self-discipline.

## **Opportunities**

### **a. Overview of Policy Support**

- **Policy Support**

With the increasing policy support from the government for the online education industry, the rapid rise of the online online vocal classroom education industry has become an important way to promote educational modernization and popularize high-quality educational resources. In order to support the healthy development of this emerging industry, the government has introduced a series of policies to provide strong guarantees for the development of online vocal classroom education industry. Vocal online classrooms are expected to gain more development opportunities.

- **Technical research and development**

Increase support for the research and development of online vocal classroom education technology, promote technological innovation and industrial upgrading. Support relevant enterprises and institutions to carry out technology research and development, achievement transformation, and industrial application.

- **Talent cultivation**

Strengthen the cultivation of teaching staff for online vocal classroom education, improve the quality of teachers and the level of education and teaching. At the same time, we encourage universities, research institutions, and online vocal classroom education institutions to cooperate and jointly cultivate outstanding talents.

- **Market Regulation**

Strengthen the supervision of the online vocal classroom education market, establish and improve market access and exit mechanisms, and regulate market order. Crack down on illegal and irregular behavior, protect consumer rights, and create a fair competition market environment.

### **b. Specific measures of policy support**

- **Promotion**

Increase the promotion of the online vocal classroom education industry, enhance its social awareness and influence. By organizing exhibitions, forums, and other activities to showcase industry achievements and promote communication and cooperation.

- **International Cooperation**

Encourage online vocal classroom education institutions to engage in exchanges and cooperation with advanced international educational institutions, introduce high-quality educational resources and concepts from abroad, and improve the level of domestic education.

- **Technological Innovation**

With the continuous development of technologies such as 5G and AI, vocal online classrooms can further improve teaching quality and efficiency, providing students with a better learning experience. New network technologies and tools continue to emerge, providing more possibilities for vocal online classrooms, such as virtual reality, augmented reality, and other technologies that can enhance the learning experience.

- **Market demand**

With the increasing emphasis on art education and the development and popularization of network technology, more and more people are choosing online learning, and the market demand for vocal online classrooms is expected to continue to grow.

- **International Teaching**

Through online platforms, vocal online classes can attract students from all over the world, achieve international teaching, and broaden students' horizons.

### **Threats**

#### **a. Competitive pressure**

- **Market saturation continues to increase**

With the rise of online education, more and more institutions and individuals are entering the field of online vocal classroom education, and the market saturation is constantly increasing. This has led to fierce competition among various institutions in terms of enrollment, curriculum design, and faculty strength. In order to stand out among numerous competitors, institutions need to constantly innovate, improve teaching quality and service levels, which undoubtedly increases their operational pressure.

- **Diversified User Needs**

Learners' demands for online vocal classroom education are becoming increasingly diverse. They not only focus on teaching quality, but also on the fun, interactivity, practicality, and other aspects of the curriculum. To meet these needs, institutions need to invest a lot of effort in curriculum development, while also paying attention to learners' feedback and adjusting teaching strategies in a timely manner. This requires institutions to constantly adapt to changes in market demand during their operations, increasing their competitive pressure.

- **Rapid technological updates and replacements**

Online online vocal music classroom education is highly dependent on Internet technology, and the speed of Internet technology upgrading is very fast. This means that institutions need to constantly keep up with new technologies, improve teaching quality and learning experience. However, the introduction of new technologies often comes with an increase in cost investment, which undoubtedly increases the operational difficulty for smaller institutions. At the same time, the application of new technologies also requires a certain learning and adaptation process, which brings certain pressure to institutions.

- **Industry regulation is becoming increasingly strict**

With the rapid development of online education, relevant departments have become increasingly strict in regulating the industry. For online vocal classroom education, it is necessary to comply with relevant educational regulations and policies to ensure the compliance and safety of teaching content. However, due to the rapid development and changes in the industry, relevant regulations and policies are constantly being improved and adjusted, which requires institutions to constantly pay attention to policy dynamics and adjust operational strategies in a timely manner to meet regulatory requirements.

#### **b. Regulatory Risks**

- **Copyright Risk**

Online vocal classroom education involves a large number of music works and teaching videos, which often involve copyright issues. If someone else's music works or instructional videos are used without authorization, it may infringe on their copyright and lead to legal disputes. Therefore, online vocal classroom education providers should pay attention to copyright issues and ensure that the music works and teaching videos used have been legally authorized.

- **Risks of Teacher Qualification Certification**

Teachers in online vocal classroom education often do not undergo strict teacher qualification certification, which may lead to uneven teaching quality and even situations where unqualified teachers mislead students. Therefore, relevant departments should strengthen the qualification



certification and supervision of online vocal classroom education teachers to ensure that they possess corresponding teaching abilities and professional qualities.

- **Data Protection Risks**

Online vocal classroom education involves a large number of students' personal information and learning data, and the security and privacy protection of this data are crucial. If relevant data is leaked or abused, it may cause harm to students' privacy and rights. Therefore, online vocal classroom education providers should strengthen data protection measures to ensure the security and privacy protection of student data.

- **Consumer Rights Protection Risks**

As a consumer service, online vocal classroom education should protect the rights and interests of consumers. However, in practical operation, there may be issues such as difficulty in refunding fees and course quality not meeting commitments, which can harm consumers' rights and interests. Therefore, relevant departments should strengthen the supervision of online vocal classroom education to ensure that consumers' rights are fully protected.

**c. Technical Security Risks**

- **Network stability issues**

Online vocal music classes heavily rely on a stable network environment. Network interruptions, delays, or unstable speeds may cause teaching interruptions, damaged sound quality, or video lag, thereby affecting the quality of teaching and students' learning experience.

- **Hardware device compatibility**

Different devices and platforms may have differences in compatibility with online teaching software. Students or teachers using incompatible devices may be unable to participate in classroom interactions or watch teaching content properly, thereby affecting teaching effectiveness.

- **Data Security and Privacy Leakage**

Online online vocal classes involve the transmission and storage of a large amount of personal information and data. If the platform or teachers fail to properly protect this data, it may lead to data leakage or abuse, causing unnecessary trouble and risks to students.

- **Online fraud and false advertising**

With the continuous expansion of the online vocal classroom education market, some criminals may use false advertising or fraudulent means to seek benefits. Students and parents should be vigilant when choosing courses to avoid being deceived.

**d. Social and Cultural Differences**

- **Challenges of Cross-Cultural Communication**

Online vocal classroom education may involve students and teachers from different cultural backgrounds. Cultural differences may lead to communication barriers, misunderstandings, or conflicts in educational concepts, thereby affecting teaching effectiveness.

- **Limitations on social awareness and acceptance**

Despite the many advantages of online vocal classroom education, its awareness and acceptance may still be limited in certain regions or groups. This may lead to certain limitations on the promotion and popularization of this model, affecting its development space.

## IV. RESEARCH RESULTS

**Table 1. Characteristics and Content of Interactivity in Online Vocal Education**

Category	Subcategory	Description
Characteristics of	Real-time	Utilizes multimedia tools (video,

<b>Interactivity</b>	<b>Interaction</b>	audio) for immediate feedback on students' singing performance, allowing vocal adjustments.
	<b>Diversity Interaction</b>	Provides various interaction forms (discussions, exhibitions, evaluations) to encourage communication and sharing among students and teachers.
	<b>Personalized Interaction</b>	Offers tailored teaching plans and suggestions based on students' individual learning needs and vocal challenges.
<b>Interactive Content</b>	<b>Design and Innovation of Teaching Content</b>	Integrates artistic elements (styles, historical background, artist stories) to enrich students' understanding of vocal art.
	<b>Personalized Customization</b>	Customizes teaching content to fit students' interests and abilities, fostering deeper learning and enhancing motivation.
	<b>Innovation and Interaction in Teaching Forms</b>	Uses online tools (Q&A, voting, group discussions, duet/choir singing) to increase student participation and engagement.
	<b>Practical Performance Opportunities</b>	Organizes online concerts, competitions, and vocal lectures to provide students with performance experience and build confidence.
<b>Teacher Guidance and Motivation</b>	<b>Passionate Teaching</b>	Teachers inspire through passion and vivid teaching methods, igniting students' interest in learning.
	<b>Encouragement and Recognition</b>	Provides timely positive feedback, acknowledging students' progress and encouraging ongoing exploration and innovation.
<b>Creating an Artistic Atmosphere</b>	<b>Classroom Environment Layout</b>	Creates an artistic atmosphere through background music, well-designed courseware, and visual elements despite the online setting.
	<b>Sharing and Communication</b>	Promotes a platform for students to share their artistic works, experiences, and insights, fostering mutual learning and inspiration.
<b>Resource Integration and Expansion</b>	<b>Introduction of External Resources</b>	Invites industry experts and artists for online lectures, providing students with broader learning opportunities.
	<b>Recommended</b>	Provides art-related reading materials

	<b>Reading Materials</b>	(books, articles, videos) for self-directed learning and intellectual expansion.
--	--------------------------	--

By carefully designing teaching content, innovating teaching forms, leveraging the guiding role of teachers, creating an artistic atmosphere, and integrating external resources, students' interest and enthusiasm for art can be effectively stimulated in vocal online classrooms, enhancing their thirst for knowledge, artistic literacy, and comprehensive abilities.

Online vocal education has many advantages in terms of interactivity, but there are also some problems. In order to fully tap into the potential of online vocal education, we need to further improve the interactive mechanism and enhance the quality of interaction. Specifically, the following measures can be taken:

1. **Strengthen the construction of network environment:** optimize network conditions, reduce the impact of network latency and signal instability on interactive teaching. At the same time, establish a stable online teaching platform to provide a good interactive environment for teachers and students.
2. **Establish regulatory mechanisms:** Develop clear interaction rules and regulatory systems to effectively monitor and manage the interaction process. Take timely measures to correct and handle violations or inappropriate language.
3. **Strengthen teacher-student interaction:** Encourage students to actively participate in classroom discussions, ask questions and answer questions, enhance the activity of the classroom atmosphere and student participation. At the same time, teachers should also pay timely attention to students' feedback and adjust teaching strategies. Utilize the functions of online platforms to establish effective teacher-student interaction mechanisms. For example, setting up online Q&A sessions to encourage students to ask questions and answer them in a timely manner; Carry out online discussion activities to promote ideological exchange and collision between teachers and students.
4. **Optimizing course design:** Based on students' learning needs and characteristics, design more reasonable and rich course content. Based on the characteristics and techniques of vocal art, develop a scientific teaching plan to ensure that students can acquire comprehensive knowledge and skills during the learning process.
5. **Provide personalized services:** Provide personalized teaching services tailored to the different needs and characteristics of students. Reasonably utilize modern information technology, establish a highly applicable learning system through artificial intelligence, data analysis, and other means, and promote the optimization of platform course content and services. Collect relevant data through various channels, monitor students' learning situation, evaluate users' learning effectiveness in a targeted manner, obtain content related to their learning needs, analyze this data, develop suitable learning paths for users, and push applicable resources and services in a targeted manner. Users can also adjust their learning strategies, develop good learning habits, and adapt to the online learning environment.
6. **Technical Application:** Modern technological means provide strong support for improving the quality of vocal online classrooms. Such as multimedia teaching resources; Interactive teaching platform; Remote interaction not only enhances the interactivity of the classroom, but also increases students' participation and interest in learning. Technologies such as artificial intelligence and big data analysis can be applied to integrate and recommend teaching resources, achieving personalized teaching; Online live streaming platforms can optimize teacher-student interaction and enhance the learning experience; Virtual reality, augmented

reality and other technologies can create a more realistic learning environment for students and improve learning efficiency. By utilizing multimedia teaching resources such as audio and video, students can more intuitively experience the charm of vocal music and improve their learning outcomes.

7. Carefully plan teaching content: Based on students' learning level and interests, develop a reasonable teaching plan to ensure that the course content is both targeted and challenging.
8. Reasonable arrangement of course schedule: Following the principle of gradual progress, arrange the teaching schedule reasonably to avoid the decline in teaching quality caused by too fast or too slow course schedule.
9. Enhancing Teachers' Professional Literacy: Teachers should possess solid vocal professional knowledge and rich teaching experience, and be able to provide precise guidance for students' problems.

## V. CONCLUSION

Compared with traditional vocal teaching, the online vocal education model can be regarded as a revolutionary change in many aspects such as teaching philosophy, methods, content, evaluation, and practice, and has played a huge role in improving the quality of teaching. Fully utilizing online vocal education can promote the leapfrog development of vocal teaching in universities. By building a fully functional and content rich online vocal teaching platform that integrates vocal teaching resource sharing, video interactive communication, and information push learning, it ensures that students can be grouped for online vocal teaching based on their ability levels, making it more personalized and targeted. And the big data of this vocal teaching platform can be used for analysis to more effectively promote the development of online vocal education. Online vocal education has both advantages and challenges in terms of interactivity. Vocal online classrooms have broad development prospects and potential. By fully leveraging their advantages, they can provide high-quality vocal education resources and learning experiences for more students. We need to continuously improve the interactive mechanism and enhance the quality and effectiveness of online vocal education. In terms of improving the teaching quality of vocal online classrooms, we need to optimize the curriculum, enhance the quality of teachers, utilize technological means, improve the teaching evaluation system, and create a positive learning atmosphere to provide students with a better learning experience. At the same time, we must constantly explore and practice to adapt to the constantly changing online education environment and promote the sustainable development of online vocal education.

## REFERENCES

- Chang, Z. (2022). The use of online vocal training programs as a means to develop creative thinking and vocal prowess. *Interactive Learning Environments*, 31, 1–12. <https://doi.org/10.1080/10494820.2022.2064514>
- Culduz, M. (2024). *Benefits and Challenges of E-Learning, Online Education, and Distance Learning*. March, 1–27. <https://doi.org/10.4018/979-8-3693-4131-5.ch001>
- Das, N. K., Sahoo, S., & Pati, L. (2021). Online Learning: Challenges for Education in Rural and Remote Areas. *Iarjset*, 8(7), 72–76. <https://doi.org/10.17148/iarjset.2021.8712>
- Dhawan, S. (2020). Online Learning: A Panacea in the Time of COVID-19 Crisis. *Journal of Educational Technology Systems*, 49(1), 5–22. <https://doi.org/10.1177/0047239520934018>
- Juan, X. (2021). Exploration of Vocal Music Teaching Mode Under the Internet Plus thinking. *Art Education*.

- Lan, X. (2022). Construction of a Music Education Model Based on Internet Big Data. *Wireless Communications and Mobile Computing*, 2022(1), 3732776. <https://doi.org/https://doi.org/10.1155/2022/3732776>
- Martínez Hernández, A. (2021). Online learning in higher music education: Benefits, challenges and drawbacks of one-to-one videoconference instrumental lessons. *Journal of Music, Technology and Education*, 13(2–3), 181–197. [https://doi.org/10.1386/jmte\\_00022\\_1](https://doi.org/10.1386/jmte_00022_1)
- Ping, L. J. (2020). *Exploration of Vocal Music Teaching Model in Colleges and Universities under the Background of Internet*. University of Electronic Science and Technology of China.
- Pratama, A. R., Taufik, M. Y., & Haryudin, A. (2019). the Influence of Internet Technology on the Development of Teaching and Learning Methods for Students. *PROJECT (Professional Journal of English Education)*, 2(6), 919. <https://doi.org/10.22460/project.v2i6.p919-923>
- Puyt, R. W., Lie, F. B., & Wilderom, C. P. M. (2023). The origins of SWOT analysis. *Long Range Planning*, 56(3), 102304. <https://doi.org/https://doi.org/10.1016/j.lrp.2023.102304>
- Sarsby, A. (2016). *SWOT Analysis*. Spectaris Limited.
- Zhilin, Y. (2020). Internet +" Vocal Music Education in Colleges and Universities. *Drama House*, 32.