International Journal of Sociologies and Anthropologies Science Reviews
Volume 5 Issue 5: September-October 2025: ISSN 2985-2730
Website: https://so07.tci-thaijo.org/index.php/IJSASR/index

A Quasi-Experimental Study on the Application of MuseScore Software to Improve Sight-Singing and Ear-Training Abilities in Music Education at Chuzhou University

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Received 29/01/2025 Revised 02/04/2025 Accepted 10/05/2025

Abstract
Background and Aim: Traditional sight-singing and ear-training methods rely primarily on auditory perception, limiting visual engagement and interactive learning. Using MuseScore software can not only solve these limitations but also provide a variety of new learning experiences. This study aimed to explore whether using MuseScore software in sight-singing and ear-training classroom teaching can affect students' performance in rhythm accuracy, pitch accuracy, and melodic dictation.
Materials and Methods: This study is a quasi-experimental study using quantitative research methods. The participants were 120 freshmen from four music major classes at Chuzhou University in Anhui Province. The sample size is 60, and the duration of the experiment is eight weeks. The 30 students in the control group adopted traditional teaching methods; the 30 students in the experimental group used MuseScore software for sight-singing and ear-training teaching. Through eight weeks of teaching from March to May 2024, the pre-test was completed before the first week, and the two groups were post-tested in the ninth week to collect students' scores in rhythm accuracy, pitch accuracy, and melodic dictation. Jamovi software was used to perform an independent sample t-test analysis on the test scores.
Results: The experimental group of students who used the MuseScore software for teaching had higher scores in rhythm accuracy, pitch accuracy, and melodic dictation than the control group, especially in melodic dictation. A significant difference in the melodic dictation scores between the two groups in the post-test, $t(58) = -3.04$, $p < 0.01$, 95% confidence interval [-3.43, -0.70], Cohen's $d = -0.78$, with a higher effect.
Conclusion: The study's results showed that the use of MuseScore software was effective in sight-singing and ear-training skills. Students who used MuseScore software showed significant improvements in pitch identification, rhythm perception, and musical memory. These results directly support the study objectives. For music educators, these findings mean that they can use MuseScore software to enrich their teaching methods. It is recommended that future research should further expand the population using MuseScore software and develop new features.
Keywords: MuseScore Software; Sight-singing and Ear-training; Music Education

Introduction

Sight-singing and ear-training courses are important in music education and play a key role in students' musical development and improvement of their overall musical ability (Bai, 2020). It is a compulsory course in the music school syllabus and is generally offered in the first and second semesters after freshmen enroll.

All accomplished musicians need to have good sight-singing and ear-training skills. Using music software for learning and training is an effective tool to achieve this advantage, and there are many ways to use software as part of a student's training (Peterson, 2006).

With the advancement of the times, computer-based digital technology has been widely used in various fields of society, and digital music teaching has also experienced considerable development in China in recent years (Bai, 2020).

Technology provides effective assistance to music teachers, music learning, creation, and performance in the 21 century (Dorfman, 2022). It can stimulate learners' interest in learning and help

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teachers improve teaching effectiveness. Music creators and arrangers commonly use digital audio workstations (DAWs) and music notation software for producing scores, arranging, and recording sounds (Bauer, 2020).

Install sheet music or production software on computers in the music room to play via projection or use the website as part of a whole-class listening skills activity. (Bauer, 2020) Teachers use software to develop teaching audio files that play melodies in different harmonies. Students learn melodic and rhythmic patterns by ear, which can assist the development of students' listening skills.

Traditional sight-singing and ear-training only use the piano as a teaching tool, with a single teaching method and only auditory stimulation. The teacher teaches by playing the piano, but the teaching effect is not obvious, and the students are not very motivated (Bai, 2020).

With the emergence and development of music software, many music-making software programs can provide 128 commonly used timbres, thus enriching the multi-timbre materials of auditory perception. However, due to the English interface of many music software and the shortcomings of teachers in software operation and teaching method diversity, the improvement of students' sight-singing and ear-training ability is not obvious (Xia, 2012).

Compared with MuseScore software, traditional methods cannot provide diverse auditory materials for students with different practice needs, especially providing timbre perception other than piano timbre. If students who use traditional methods to learn sight-singing have a low level of piano playing, they will not be able to complete the sight-singing materials they need to learn. It is very convenient to use music software to make sight-singing and melodic dictation materials (Yu, 2011).

By consulting the literature, it is found that there has been no comprehensive research on the use of free and open source music software to assist in improving sight-singing and ear-training skills in music teaching. Although various software tools such as Sibelius and Ear Master have been studied, little research has focused on MuseScore, despite its free accessibility and rich features. This study seeks to bridge this gap by assessing its impact on sight-singing and ear-training.

MuseScore, a free and open-source music notation software, has many advantages in making and playing sight-singing and ear-training teaching materials. This study used MuseScore software in the sight-singing and ear-training teaching of the experimental group to determine whether it could affect students' performance in rhythm accuracy, pitch accuracy, and melodic dictation.

Based on the above research and thinking, the main research questions for the practical teaching research of using MuseScore software in sight-singing and ear-training courses are as follows:

1. How effective is the application of MuseScore software in improving students’ sight-singing skills?

2. How effective is the application of MuseScore software in improving students’ ear training skills?

Objectives

This study aims to introduce MuseScore software to assist sight-singing and ear-training course teaching for first-year music majors at the School of Music of Chuzhou University. The specific research objectives are three points:

1. To design and implement a structured instructional model integrating MuseScore software for enhancing sight-singing and ear-training skills among first-year music students.

2. To assess the impact of MuseScore software on the accuracy of rhythm and pitch in sight-singing assessments conducted among first-year music students.

3. To evaluate the overall effectiveness of MuseScore software in improving sight-singing and ear-training proficiency, including rhythm accuracy, pitch accuracy, and melodic dictation skills, among first-year music students.

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Literature review

Music software in education

With the development of science and technology, Musical Instrument Digital Interface (MIDI) technology and digital audio workstations (DAWs) have been widely used in music creation and music teaching (Bauer, 2020; Gao, 2022). Professional software with music score production functions, such as Sibelius, Overture, Finale, MuseScore, Encore, etc., all have a large number of users (Dammers & LoPresti, 2020).

Mona and Hidayat (2021) pointed out in their research that the learning of basic vocal music is a compulsory item in the national teaching plan. Music accompaniment is required when teaching how to master vocal techniques to sing, and multiple practices are required, which results in teachers' teaching time being tight. In the study, Sibelius software was used to assist learning singing. Specifically, Sibelius software was used to write the accompaniments of songs that needed to be practiced. The study used a quasi-experimental method. The learning group was the experimental group, and there was no control group.

Cubase is a music production software developed by the German company Steinberg in 1989 (Bai, 2020). The earliest version was launched in 1992, and it began to support the Windows platform in 1992. As the version is updated, its functions have gradually become more powerful. Through actual operation, the author believes that this software is more professional in terms of installation and operation, and has higher computer configuration requirements. The operator needs to promptly replace the required audio source as needed.

Compared with notation software, this software has better sound than notation software. At the same time, this software is connected with the Sibelius software. The score in Sibelius can be directly imported into Cubase software in MIDI form, providing music producers with convenience (Bauer, 2020).

In summing up, the emergence of a variety of professional five-line notation software and their application in teaching have been developing continuously with the advancement of science and technology. The practical application of music software in the field of music education will increasingly show its advantages.

Advantages of digital tools in sight-singing and ear-training learning

Schüler (2021) pointed out in his paper on modern sight-singing and ear-training teaching methods that, through more than ten years of software development, many software programs to support music education have been developed, and SmartMusic, SingSnap, EarTrainer, and YouTube can effectively improve students' sight-singing and ear-training skills. By comparing students' pre-test and post-test scores, the scores of students who use software training are significantly higher than those who do not, especially in listening. Students who use software to study are more motivated than those who do not use software.

Similarly, in a quasi-experimental study, Nair et al. (2024) used 70 first-year Chinese music students from Hunan City University in China. The experimental group used the five-line notation software Overture for eight weeks and compared it with the control group using traditional teaching. The results showed that the experimental group had significantly higher overall scores in melodic intervals, rhythmic patterns, monophonic music, and two-part music than the control group.

In summary, the above studies all show that the use of different music software has a good effect on improving students' sight-singing and ear-training abilities, but no research has been found on the use of MuseScore software in sight-singing and ear-training courses for music majors. In particular, the impact of the application of MuseScore software in sight-singing and ear-training teaching on students' rhythm accuracy, pitch accuracy, and melodic dictation is still unknown, and this study will fill the research gap in this area.

Specific benefits of MuseScore in music pedagogy

MuseScore is a free, open-source music notation software with rich features that can be used to create, edit, and share music scores. Runs on Windows, Linux, and Mac (Dammers & LoPresti, 2020).

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MuseScore software has a multi-language switching function, and you can freely choose the language of the interface, which is very convenient for Chinese music teachers to use.

Since 2009, the MuseScore development team has been steadily improving the software's functionality and expanding its user base, with regular internal updates and operational improvements (Watson, 2018). The latest version is 4.1.1.

Unlike Finale NotePad, Sibelius First, and Dorico SE, there is no limit to the number of staff measures that MuseScore can create or any other features, because MuseScore does not require payment. (Norman, 2023) With the developer update to MuseScore 4, the notation software has a strong edge over the competition thanks to its intuitive design and enhanced audio playback capabilities. When searching to download this software, please note that it is not the same as MuseScore.com, a platform for sharing digital sheet music.

MuseScore software has a powerful notation function and can produce piano scores, chorus scores, percussion scores, guitar scores, song melodies and lyrics, individual rhythms, melodic dictation questions, sight-singing melodies, symphony orchestra scores, and various extraordinary (Shinn, 2013). There are regular musical instrument combination templates in the software, which can be quickly retrieved and used, making it convenient and concise. Unconventional combinations of multiple instruments can be achieved by adding each instrument individually, allowing for the production of musical scores that combine instruments freely.

MuseScore has great application value in music education. For example, it can help students practice, compose, and experiment with music without having to pay any fees. Teachers can also use it to create music teaching materials and exercises, such as making scale practice sheets and creating various rhythmic patterns. Moreover, the open-source nature of MuseScore allows students and teachers to use and share it freely, which provides great flexibility and scalability for music education. Todea (2015) enhanced students' music reading skills by having them use MuseScore to create notes and rhythms in order to learn music theory.

Based on the many advantages of the MuseScore software mentioned above, the purpose of this study is to explore whether the use of its main functions in the teaching of sight-singing and ear-training courses can have an impact on students' pitch accuracy, rhythm accuracy, and melodic dictation.

Cognitive load theory

Cognitive Load Theory is an instructional theory developed by John Sweller in the late 1980s, focused on how human cognitive architecture affects learning (Sweller, 2011). It is built around the understanding of how the brain processes and retains information, particularly in working memory, which has limited capacity. According to Cognitive Load Theory, working memory has a limited capacity and can usually only process 3-7 units of information at a time. Therefore, exceeding this capacity will lead to a decrease in learning efficiency.

Cognitive Load Theory has been extensively applied in educational settings and instructional design.

According to Mayer's multimedia learning principles, visuals and audio are used strategically to align with the brain's dual-channel processing system (Mayer, 2005). Providing learners with step-by-step examples to reduce intrinsic load can serve as a model for problem-solving.

According to Sweller (2011), cognitive load theory suggests that presenting both visual and auditory information simultaneously enhances learning efficiency. In music education, this is particularly relevant when using software like MuseScore, which allows students to process notation and sound together, reducing extraneous cognitive load and improving retention (Mayer, 2005).

Owens and Sweller (2008) combined cognitive load theory with music education. By designing two music teaching experiments, they found that the spatial combination of visual text and music score, and the bimodal transmission of auditory materials and music scores, is more advantageous than the separately placed visual materials. The effect of presenting two or three pieces of information at the same time is better than the continuous presentation of materials.

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Price (2010) applied cognitive load theory to the reading and learning of musical notation. The elementary school students were taught simple music symbols and markings when learning the recorder. The traditional teaching method of presenting the complete music score during the first teaching was more effective than the modified teaching method using cognitive load theory.

In short, the combination of the emergence and development of cognitive load theory and music teaching provides guidance and reference for exploring the use of different teaching techniques and methods in music education. It also provides theoretical support for this study to explore the application of MuseScore software in sight-singing and ear-training teaching.

Music learning theory

Music learning theory is not a teaching method; it is a guide for music educators on how to develop orderly teaching content in teaching (Gordon, 2007). Gordon elaborated on how to learn music in his work. He has conducted in-depth research on the understanding of the nature of audiation, musical qualifications, and musical achievements. Two very important aspects of music learning theory are audiation and the sequence of music learning (Gordon, 2007).

Gordon (2007)'s main method in music teaching is to allow students to audiate and learn in sequence according to the principles of music learning theory. The teacher sets a certain mode and beat for the students, and then the students perform rhythm patterns and pitch types. Students can also sing a variety of familiar rhythm patterns and pitch patterns to unfamiliar rhythm patterns and pitch patterns in the mode and rhythm context of their design. Listen to various pitch patterns and rhythm patterns during this process.

In summary, Gordon's learning theory is closely related to the sight-singing and ear-training course taught in this study. Among them, the pitch pattern and rhythm pattern of music learning are important contents in the sight-singing and ear-training teaching in this study. This theory can provide a reference for the teaching of rhythmic patterns and pitch patterns in the teaching of this study.

Conceptual Framework

The purpose of this study is to investigate the similarities and differences between the scores of students who were taught sight-singing and ear-training using MuseScore software and traditional teaching methods. The study took two groups of students who participated in sight-singing and ear-training courses as the research subjects, and divided them into an experimental group and a control group. The independent variables of the study were the use of MuseScore software, and the three dependent variables were rhythm accuracy, pitch accuracy, and melodic dictation in sight-singing and ear-training learning. The reason why rhythm accuracy, pitch accuracy, and melodic dictation were selected as dependent variables is that these three items are the most important observation points in the teaching content and assessment of sight-singing and ear-training courses. The experimental group introduced MuseScore software to assist teaching during the eight-week teaching process, while the control group adopted the traditional teaching method of using only a piano. The two groups of students took the same pre-test and post-test before and after the eight-week teaching, including sight-singing and sight-reading parts, and recorded the rhythm accuracy scores, pitch accuracy scores, sight-singing and ear-training scores, and melodic dictation scores, respectively. The conceptual framework is as follows:

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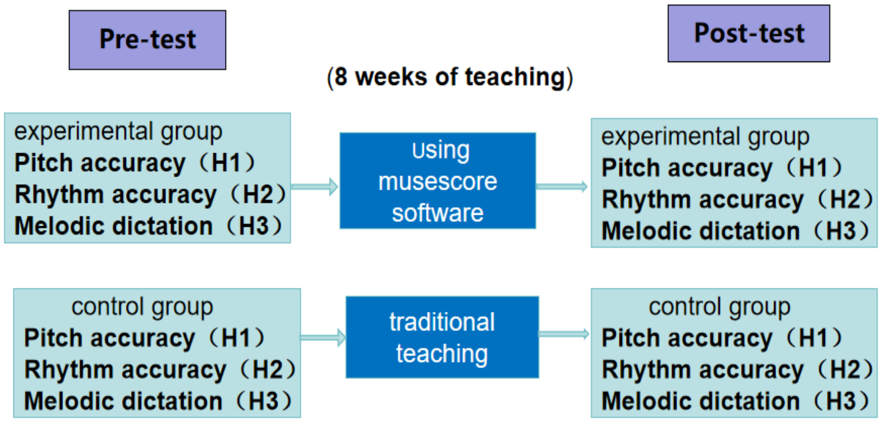

Figure 1 Conceptual Framework
Note: Constructed by the Author

According to the structure of the conceptual framework, the following hypotheses were formulated:

$H_0$1: There is no difference in rhythm accuracy between the experimental group and the control group in the post-test of the sight-singing and ear-training examination.

H_a1: There is a difference in rhythm accuracy scores between the experimental group and the control group in the post-test of the sight-singing and ear-training examination.

$H_0$2: There is no difference in pitch accuracy scores between the experimental group and the control group in the post-test of the sight-singing and ear-training examination.

H_a2: There is a difference in pitch accuracy scores between the experimental group and the control group in the post-test of the sight-singing and ear-training examination.

$H_0$3: There is no difference in melodic dictation scores between the experimental group and the control group in the post-test of the sight-singing and ear-training examination.

H_a3: There is a difference in melodic dictation scores between the experimental group and the control group in the post-test of the sight-singing and ear-training examination.

Methodology

This study was a quasi-experimental study of quantitative research with a pretest-posttest design without random assignment.

The research design was to conduct eight weeks of sight-singing and ear-training instruction as well as a pre-test and a post-test for the experimental and control groups.

The control group adopted traditional teaching methods, and the teaching equipment used piano and sight-singing, and ear-training teaching materials. The sight-singing and ear-training teaching materials, teaching content, teaching progress, and teaching time of the control group and the experimental group were the same.

The specific process is that before the first week of class, the experimental group and the control group use the same test paper to conduct a pre-test and obtain the results.

During the eight-week sight-singing and ear-training teaching, teachers in the experimental group used MuseScore software to display teaching content in class and conduct practical teaching. When teaching sight-singing to the experimental group, the teacher used the tempo feature of MuseScore software to play sight-singing pieces at different speeds to assist students' sight-singing learning. Students completed guided exercises in rhythmic accuracy using the metronome function of MuseScore. In the ninth week, students in the experimental and control groups were tested. The post-test scores of the two groups were obtained.

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Both the pre-test and post-test of the experimental group and the control group included two parts, namely sight-singing and ear training. Sight-singing was divided into two melodies. Each melodic was worth 30 points, which were awarded according to the accuracy of sight-singing rhythm and pitch. For scoring, melodic dictation includes two melodies, each worth 20 points. According to the teaching content, the difficulty range of the pre-test is within the melodic range without sharps and flats. The difficulty of the post-test is increased, and the range is selected within the melodic range of two rising and two falling notes. In terms of rhythm, the rhythm of the post-test includes triplets, sixteenth note rests, etc.

The sight-singing score is scored by two teachers, and the average score is the candidate's score. The ear-training score is scored according to the course scoring guide. Each student's pre-test and post-test scores are the sum of sight-singing and ear training.

After obtaining the scores, use Jamovi software for data analysis and an independent sample t-test to test the hypothesis.

Research Instrument

Reliability and validity of the Research Instrument

The performance test of this study was scored according to the scoring method of the sight-singing and ear-training course syllabus of the Conservatory of Music of Chuzhou University. The outline was developed under the guidance of five experts from the college and has been used for ten years to ensure the reliability and validity of this research tool.

To ensure fairness and impartiality in the scoring, the scoring teachers involved in the sight-singing and ear-training test must have at least 5 years of sight-singing and ear-training teaching experience, and the same two teachers will be used to score the pre-test and post-test of the sight-singing and ear-training test.

Table 1 includes the three dependent variables of the sight-singing and ear-training test defined in this study, namely rhythm accuracy, pitch accuracy, and melodic dictation, as well as the specific operation process and scoring criteria of the sight-singing and ear-training test.

Table 1 Operationalization Table of sight-singing and ear-training test

Variables	Definition	Operationalization	Source	Scale
Rhythm Accuracy	Rhythmic accuracy in sight-singing is the correct number of rhythms in the sight-singing content, including the length of note durations and the organization of notes in various rhythmic patterns (Karpinski, 2000).	Each candidate selects 2 sight-singing items from the sight-singing test question bank, and two examiners score on-site based on the candidate's performance and evaluation criteria.	Grading method for the sight-singing and ear-training course syllabus of Chuzhou University Conservatory of Music	0-30 (Excellent: 26-30; Good: 21-25; Qualified: 16-20; Needs improvement: 11-15; Unsatisfactory: 0-10)
Pitch Accuracy	Pitch accuracy refers to the number of pitches that a subject correctly completes on a test question, specifically the identification of note names in the staff (Henry, 2011).	Each candidate selects 2 sight-singing items from the sight-singing test question bank, and two examiners score on-site based on the candidate's performance and evaluation criteria.	Grading method for the sight-singing and ear-training course syllabus of Chuzhou University Conservatory of Music	0-30 (Excellent: 26-30; Good: 21-25; Qualified: 16-20; Needs improvement: 11-15; Unsatisfactory: 0-10)
Melodic dictation	Melodic dictation is a music training and	Candidates complete the written melodic	Grading method for the	0-40 (Excellent: 32-40;

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Variables	Definition	Operationalization	Source	Scale
	assessment method that requires learners to identify melodic through listening and write them accurately. Focus on the accuracy of rhythm and Melodic intervals (Gillespie, 2001).	dictation test according to the specific requirements of the ear training test, and the teacher scores based on the answer sheet and evaluation criteria.	sight-singing and ear-training course syllabus of Chuzhou University Conservatory of Music	Good: 25-31; Qualified: 18-24; Needs improvement: 11-17; Unsatisfactory: 0-10)

Population and Sample Size

The population of this study is the first-year undergraduate students majoring in musicology at the Conservatory of Music of Chuzhou University in Anhui Province.

They are aged between 18 and 20 years old. There are four classes in the freshman year, with 30 students in each class, totaling 120 students. Most of the students are from Anhui Province, and a few students are from outside the province. They have taken the examination for art music majors in Anhui Province, and have all learned sight-singing and pitch, and rhythm dictation of staffs. Each student has learned vocal music and an instrument.

This research applied an independent sample t-test as a statistical method. To calculate the sample size, the G*Power software is utilized for sample size estimation. The G*Power software is designed to provide an accurate power analysis for most statistical tests in behavioral science (Faul et al., 2009).

In this study, a priori analysis that computed the required sample size was calculated via the following values: a priori analysis for means difference between two independent means, Tail(s) 2, Effect size, 0.95 error probability, 0.05, 0.95 power, and Allocation ratio N2/N1. The results showed that the study needs a minimum of group 1 or 30 and group 2 of 30, for which total of 60 samples. So the sample size for both the experimental group and the control group in this study is 30 participants.

Sampling Strategy

Cohen et al. (2018) pointed out in the work on educational research methods that purposive sampling is a feature of quantitative research. The researcher makes specific selections of characteristics based on the representativeness of the study and carefully selects the sample to meet the needs of the study.

This study used a purposive sampling technique to select a sample size of 60. Purposive sampling was based on 120 students from four natural classes. The conditions for purposive sampling were to select two natural classes with a similar ratio of male and female students and to meet similar average scores in the pre-test of sight-singing and ear-training. Two classes that met the conditions were selected from the four natural classes as the experimental group and the control group.

Data Collection and Analysis

This study conducted an eight-week sight-singing and ear-training course from March 4 to May 10, 2024. Two classes were arranged per week for a total of 90 minutes. MuseScore software was used in the experimental group. Sight-singing was taught in the first class. MuseScore software provided three speeds for the sight-singing repertoire. Each time the software's metronome was turned on, students also used the software to sight-sing a variety of rhythms and scales. The metronome was used during practice. The software was used for about 30 minutes in class. Ear training was conducted in the second class. MuseScore software was used to play the rhythmic pattern and pitch pattern in the textbook and the dictated melodic line five times at a slow speed. The metronome was turned on during playback, and the metronome was turned on when practicing melodic listening and recording. The metronome was turned off for the next two exercises. The triplet rhythm and forty-six rhythm were also presented separately in the class at a slow speed. The software's metronome function was used for intensive rhythm learning. The second class used MuseScore software for about 35 minutes. The control group used piano and blackboard teaching, and the teacher used the blackboard only to emphasize the distance of intervals

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and the display of rhythmic patterns. With the completion of the eight-week teaching of the sight-singing and ear-training course, the sight-singing and ear-training course examination was conducted in the ninth week.

The 60 students are divided into the experimental group and the control group who participated in sight-singing ear training were given pre-test and post-test, and the rhythm scores of sight-singing, the pitch scores of sight-singing, and the scores of melodic dictation were obtained, respectively.

The data analysis in this study was conducted using Jamovi 2.3.28 software for statistical analysis.

An independent sample t-test was used because it effectively measures differences in mean scores between two distinct groups, providing a reliable measure of Musescore's impact on sight-singing and ear-training skills (Miksza & Elpus, 2018). Before conducting an independent sample t-test analysis of the data, the pre-test and post-test data need to be tested for normal distribution and homogeneity of variance to ensure that the data meet the requirements for analysis using the independent sample t-test. The performance of rhythm accuracy, pitch accuracy, and melodic dictation in each group before and after the test was calculated and compared between the two groups.

Results

Demographic Information

The sample of this study is first-year undergraduate students majoring in music. The age and gender of the students are the basic characteristics of the sample. The following is a specific analysis.

Table 2 shows the gender of the sample students. In the control group, there were 12 male students and 18 female students, for a total of 30 individuals. This accounted for 50% of the overall sample size. On the other hand, the experimental group consisted of 10 male students and 20 female students, with a total of 30 individuals, making up 50% of the overall sample size. Overall, there were 22 male students (36.7%) and 38 female students (63.3%) in the sample. There is little difference in the number of male and female students in the two groups.

Table 2 Gender of the Sample Students.

Group	Gender	Frequency	Percentage	Total number of samples
Control	Male	12	40.0%	30
	Female	18	60%	
Experimental	Male	10	33.3%	30
	Female	20	66.7%	

Table 3 shows the ages of the sample students. The sample students were between 18 and 20 years old, with the oldest being 20 (25.0%) and the youngest being 13 (21.7%). The largest number of students was 19 years old, with 32 (53.3%).

Figure 2 age distribution of the experimental and control groups, illustrating the comparable demographic composition across both samples. It can be seen from Table 3 and Figure 2 that the age composition of boys and girls in the two groups is very similar.

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Table 3 Age of the Sample Students

Age	Group	Frequency	Percentage	Percentage of Total
18 years old	Control	7	11.7%	21.7%
	Experimental	6	10.0%	
19 years old	Control	15	25.0%	53.3%
	Experimental	17	28.3%	
20 years old	Control	8	13.3%	25.0%
	Experimental	7	11.7%	

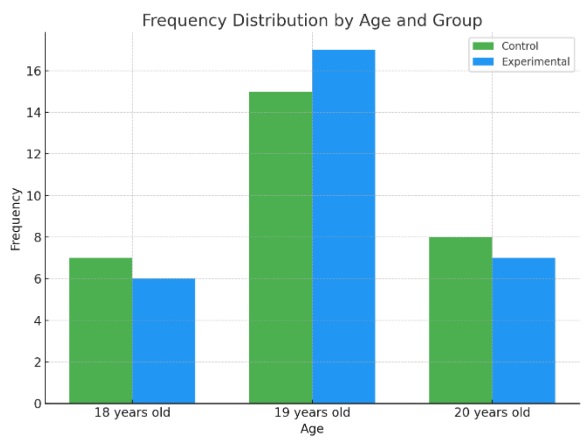

Figure 2 Age of the experimental and control group samples
Note: Constructed by the Author

Hypothesis Testing Results

The hypothesis testing was presented as follows:

$H_0 1$: There is no difference in rhythm accuracy scores between the experimental group and the control group in the post-test of the sight-singing and ear-training examination.

$H_a 1$: There is a difference in rhythm accuracy scores between the experimental group and the control group in the post-test of the sight-singing and ear-training examination.

This study used an independent sample t-test to investigate whether there was a difference in the rhythm accuracy scores of students in the experimental group and the control group in the pre-test and post-test between the teaching of sight singing and ear training using MuseScore software and the traditional teaching model.

By drawing Q-Q graphs and Shapiro-Wilk tests, the Normality results show $p=0.49 > 0.05$. It was found that the two sets of data obeyed the normal distribution. By Levene's test, $F=3.67$, $P=0.06$, it was found that the two sets of data satisfied the homogeneity of variance and met the conditions of the Student's independent sample t-test.

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Table 4 Descriptive statistics of pre-test and post-test of rhythm accuracy in the experimental group and the control group

	Group	N	Mean	Median	SD	SE
Pre-Rhythm Accuracy	Control	30	23.4	23.5	1.99	0.36
	Experiment	30	23.6	24.0	2.01	0.37
Post-Rhythm Accuracy	Control	30	24.1	24.5	2.58	0.47
	Experiment	30	25.6	26.0	1.65	0.30

In Table 4, Pre-test scores of 30 participants in the control group on rhythm accuracy, M=23.5, SD=1.99, and Post-test results, M=24.1, SD=2.58. Pre-test scores of 30 participants in the experimental group on rhythm accuracy, M=23.6, SD=2.01; Post-test results, M=25.6, SD=1.65. These findings suggested that both groups experienced an increase in their mean scores after the intervention. The experimental group had a 1.3-point higher improvement in average score compared to the control group. From this point of view, the experimental group displayed a more substantial improvement in mean scores.

Table 5 Independent sample t-test of rhythm accuracy scores between the experimental group and control group in pre-test and post-test

							95% Confidence Interval			
		Statistic	df	p	Mean difference	SE difference	Lower	Upper		Effect Size
Pre-Rhythm Accuracy	Student's t	-0.39	58	0.70	-0.20	0.52	-1.23	0.83	Cohen's d	-0.10
Post-Rhythm Accuracy	Student's t	-2.62	58	0.01	-1.47	0.56	-2.59	-0.35	Cohen's d	-0.68

In Table 5, an independent samples t-test was calculated to compare students' rhythm accuracy scores between the control group and the experimental group. There is no significant difference in the rhythm accuracy pre-test scores between the experimental group and the control group, t (58) = -0.39, p =0.70 >0.05, 95% Confidence Interval [-1.23,0.83], Cohen's d = -0.10, has a small effect.

There is a significant difference in the rhythm accuracy scores of the experimental group and the control group in the post-test, t (58) = -2.62, p =0.01 <0.05, 95% Confidence Interval [-2.59, -0.35], Cohen's d = -0.68, indicating a moderate effect. The experimental group is higher than the control group. Thus, the null hypothesis 1 was rejected. The result indicated that students' rhythm accuracy scores between the control group and experimental group were different.

$H_0$2: There is no difference in pitch accuracy scores between the experimental group and the control group in the post-test of the sight-singing and ear-training examination.

H_a2: There is a difference in pitch accuracy scores between the experimental group and the control group in the post-test of the sight-singing and ear-training examination.

This study used an independent sample t-test to investigate whether there was a difference in the pitch accuracy scores of students in the experimental group and the control group in the pre-test and post-

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test between the teaching of sight singing and ear training using MuseScore software and the traditional teaching model.

By drawing Q-Q graphs and Shapiro-Wilk tests, the Normality results show p=0.31 >0.05. It was found that the two sets of data obeyed the normal distribution. By Levene's test, F=2.88, P=0.09, it was found that the two sets of data satisfied the homogeneity of variance and met the conditions of the Student's independent sample t-test.

Table 6 Descriptive statistics of pre-test and post-test of pitch accuracy in the experimental group and the control group

	Group	N	Mean	Median	SD	SE
Pre-Pitch Accuracy	Control	30	22.3	23.0	2.83	0.52
	Experiment	30	23.3	23.0	2.07	0.38
Post-Pitch Accuracy	Control	30	22.8	23.0	3.72	0.68
	Experiment	30	24.8	25.0	2.24	0.41

In Table 6, Pre-test scores of 30 participants in the control group on pitch accuracy, M=22.3, SD=2.83, and Post-test results, M=22.8, SD=3.72. Pre-test scores of 30 participants in the experimental group on rhythm accuracy, M=23.3, SD=2.07; Post-test results, M=24.8, SD=2.24. These findings suggested that both groups experienced an increase in their mean scores after the intervention. The experimental group had a 1-point higher improvement in average score compared to the control group. From this point of view, the experimental group displayed a more substantial improvement in mean scores.

Table 7 Independent sample t-test of pitch accuracy scores between the experimental group and the control group in pre-test and post-test

							95% Confidence Interval			
		Statistic	df	p	Mean difference	SE difference	Lower	Upper		Effect Size
Pre-Pitch Accuracy	Student's t	-1.51	58	0.14	-0.97	0.64	-2.25	0.31	Cohen's d	-0.39
Post-Pitch Accuracy	Student's t	-2.52	58	0.01	-2.00	0.79	-3.59	-0.41	Cohen's d	-0.65

In Table 7, an independent samples t-test was calculated to compare students' pitch accuracy scores between the control group and the experimental group. There is no significant difference in the pitch accuracy pre-test scores between the experimental group and the control group, t (58) = -1.51,p =0.14 >0.05, 95% Confidence Interval [-2.25,0.31], Cohen's d = -0.39, which has a small effect.

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There is a significant difference in the pitch accuracy scores of the experimental group and the control group in the post-test, t (58) = -2.62, p =0.01 <0.05, 95% Confidence Interval[-3.59, -0.41], Cohen's d = -0.65, indicating a moderate effect. The experimental group is higher than the control group. Thus, the null hypothesis 2 was rejected. The result indicated that students' pitch accuracy scores between the control group and experimental group were different.

$H_0$3: There is no difference in melodic dictation scores between the experimental group and the control group in the post-test of the sight-singing and ear-training examination.

H_a3: There is a difference in melodic dictation scores between the experimental group and the control group in the post-test of the sight-singing and ear-training examination.

This study used an independent sample t-test to investigate whether there was a difference in the melodic dictation scores of students in the experimental group and the control group in the pre-test and post-test between the teaching of sight singing and ear training using MuseScore software and the traditional teaching model.

By drawing Q-Q graphs and Shapiro-Wilk tests, the Normality results show p=0.09 >0.05. It was found that the two sets of data obeyed the normal distribution. By Levene's test, F=2.63, P=0.11, it was found that the two sets of data satisfied the homogeneity of variance and met the conditions of the Student's independent sample t-test.

Table 8 Descriptive statistics of pre-test and post-test of melodic dictation scores in the experimental group and the control group

	Group	N	Mean	Median	SD	SE
Pre-Melodic Dictation	Control	30	31.7	32.5	2.18	0.40
	Experiment	30	32.1	32.5	2.36	0.43
Post-Melodic Dictation	Control	30	32.3	32.0	2.94	0.54
	Experiment	30	34.4	35.0	2.30	0.42

In Table 8, Pre-test scores of 30 participants in the control group on melodic dictation, M=31.7, SD=2.18, and Post-test results, M=32.3, SD=2.94. Pre-test scores of 30 participants in the experimental group on rhythm accuracy, M=32.1, SD=2.36; Post-test results, M=34.4, SD=2.30. These findings suggested that both groups experienced an increase in their mean scores after the intervention. The experimental group had a 1.7 point higher improvement in average score compared to the control group. From this point of view, the experimental group displayed a more substantial improvement in mean scores.

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Table 9 Independent sample t-test of melodic dictation scores between the experimental group and the control group in pre-test and post-test

		Statistic	df	p	Mean difference	SE difference	95% Confidence Interval Lower	95% Confidence Interval Upper		Effect Size
Pre-Melodic Dictation	Student 's t	-0.62	58	0.56	-0.37	0.59	-1.54	0.81	Cohen's d	-0.16
Post-Melodic Dictation	Student 's t	-3.04	58	0.00	-2.07	0.68	-3.43	-0.70	Cohen's d	-0.78

Table 9 is an independent sample t-test comparing the melodic dictation scores of students in the control group and the experimental group.

There is no significant difference in the melodic dictation pre-test scores between the experimental group and the control group, t (58) = -0.62, p = 0.56> 0.05, 95% confidence interval [-1.54, 0.81], Cohen's d = -0.16, indicating a small effect.

There is a significant difference in the melodic dictation scores between the experimental group and the control group in the post-test, t (58) = -3.04, p = 0.00 < 0.05, 95% confidence interval [-3.43, -0.70], Cohen's d = -0.78, with a higher effect, the experimental group is higher than the control group, therefore, the null hypothesis 3 is rejected. The result indicated that students' melodic dictation scores between the control group and experimental group were different.

From the above analysis, it can be seen that after using MuseScore software to teach students in the sight-singing and ear-training course, students' pitch accuracy, rhythm accuracy, and melodic dictation ability have been improved.

In conclusion, in the process of hypothesis testing, according to the results of independent samples t-tests, the null hypotheses were all tested to be rejected in Table 10.

Table 10 Summary of Hypothesis Testing and Results

Hypotheses	Statement	Result after Analysis
H_01	There is no difference in rhythm accuracy scores between the experimental group and the control group in the post-test of the sight-singing and ear-training examination.	Rejected
H_02	There is no difference in pitch accuracy scores between the experimental group and the control group in the post-test of the sight-singing and ear-training examination.	Rejected
H_03	There is no difference in melodic dictation scores between the experimental group and the control group in the post-test of the sight-singing and ear-training examination.	Rejected

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International Journal of Sociologies and Anthropologies Science Reviews
Volume 5 Issue 5: September-October 2025: ISSN 2985-2730
Website: https://so07.tci-thaijo.org/index.php/IJSASR/index

Discussion

This study used MuseScore software in the sight-singing and ear-training course to teach 30 first-year music students from the School of Music of Chuzhou University for eight weeks, and the control group of 30 students used traditional teaching methods for eight weeks. The pre-test and post-test results showed that the experimental group had significantly higher scores in rhythm accuracy, pitch accuracy, and melodic dictation than the control group.

Regarding the answer to the first question of this study, MuseScore software is effective in improving students' sight-singing ability. The average sight-singing score of the experimental group students in the post-test was 50.4 points, which was 3.5 points higher than the 46.9 points of the control group. The rhythm accuracy of the experimental group students was 1.5 points higher than that of the control group, and the pitch accuracy of the experimental group students was 2 points higher than that of the control group. The results of this study that using MuseScore software is beneficial for improving students' sight-singing ability are consistent with the research of Ayderova (2021). Ayderova (2021) used music notation software for one semester and found that music software can effectively correct students' problems and improve the learning of rhythm and melodic phrases. The use of the metronome in the software can effectively improve students' grasp of rhythm and speed.

When using MuseScore software for sight-singing instruction, the researchers played the sight-singing content to the students and turned on the metronome of the software. At the same time, by setting three different speeds, they increased the joint cognition of vision and hearing for the students, which is similar to the method of Ayderova. It can be seen that the metronome function of MuseScore software and its ability to play at multiple speeds are very helpful for students to learn sight-singing. Schüler (2021) after four weeks of teaching 23 freshmen using the free online software SingSnap and the commercial music software SmartMusic in sight-singing teaching, Schüler (2021) found through pre-test and post-test that the average score of the pre-test was 39.9 and the post-test was 78 points, and the learning effect of using music software was significant. Although Schüler's research has a smaller sample size than this study and the number of practical teaching weeks is only half of that of this study, it also shows that the use of music software can significantly improve students' sight-singing scores.

As an answer to the second research question of this study, the students in the experimental group who used MuseScore software to learn performed significantly better than the control group in the melodic dictation test of music listening skills. The average score of the experimental group in the post-test melodic dictation was 34.1, and that of the control group was 32.7, which was 1.8 points higher than that of the control group.

Nair et al. (2024) focused on using Overture software to improve students' auditory abilities. Through eight weeks of teaching 70 first-year students from Hunan City University, pre-tests and post-tests were completed through a quasi-experimental design. It was found that the experimental group's scores in melodic intervals, rhythmic patterns, and monophonic music in auditory skills were significantly higher than those of the control group. Their findings are consistent with those of this study.

In short, the use of MuseScore software in sight-singing and ear-training teaching provides students with rich learning materials and effective learning methods, which are impossible to achieve with traditional music teaching. To highlight the pedagogical significance of using MuseScore software, it is essential to explore its practical applications in a variety of learning environments.

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One possible limitation of this study is the role of instructor expertise. Since the experimental group relied on MuseScore software, the instructor's proficiency with the software may have influenced student outcomes. Future studies should account for instructor variability to determine the software's effectiveness independently of teaching style.

Conclusion

This study introduced MuseScore software into the sight-singing and ear-training course of the first-year undergraduate music major at Chuzhou University, and designed a quasi-experimental quantitative study to compare the effects of different teaching methods on students' sight-singing and hearing abilities. Through the pre-test, two natural classes were selected from four natural classes with a population of 120 people as the experimental group and the control group, each with 30 people. The two groups were selected on the condition that the pre-test scores of the two classes were similar and the age and gender ratio of boys and girls in the two classes were not much different, so as to ensure that the gender and age ratio would not affect the comparison of the research results. Through eight weeks of teaching twice a week for a total of 90 minutes, the experimental group introduced MuseScore software, and the control group used traditional piano and blackboard teaching. The post-test of the two groups was completed in the ninth week. Through the collection and analysis of pre- and post-test data, it was found that both groups had improved their sight-singing and ear-training abilities, and the experimental group showed a greater significance than the control group. In terms of rhythm accuracy, there was no significant difference between the two groups in the pre-test $p=0.70$, and there was a significant difference in the post-test $p=0.01$. In terms of pitch accuracy, there was no significant difference between the two groups in the pre-test $p=0.14$, and there was a significant difference in the post-test $p=0.01$. In terms of melody dictation, there was no significant difference between the two groups in the pre-test $p=0.56$, and there was a significant difference in the post-test $p=0.00$. The three null hypotheses were rejected.

By comparing the scores in the three aspects, the difference in the scores in melody dictation was more obvious. Through the analysis of the test papers, it was found that the students in the experimental group performed better in the rhythm and melody intervals of melody dictation. The students in the experimental group performed better than the control group in terms of triplet and forty-six rhythm patterns, and large intervals of fourths, fifths, and sixths.

The results of this study show that the use of music software for teaching can effectively improve students' music skills (Dorfman, 2022; Nair et al., 2024; Peterson, 2006; Schüler, 2021). Compared with the studies of Peterson (2006) and Schüler (2021), this study conducted a separate experimental investigation on melodic dictation in sight-singing and ear-training exercises.

Using MuseScore software in sight-singing and ear-training courses is more convenient and has more advantages than traditional teaching (Bai, 2020; Norman, 2023; Shinn, 2013; Xia, 2012; Yu, 2011). Compared with the study of Xia (2012) and Yu (2011), this study utilized the speed function of MuseScore in experimental teaching to play sight-singing melodies at various tempos for sight-singing practice, which was not addressed in their research.

The contributions of this study to music education are mainly in the following three aspects. First, MuseScore software was introduced to assist in sight-singing and ear-training instruction, and a large number of teaching materials were produced. Second, the metronome function of the software was used to help students learn rhythm, resulting in significant improvements in their melodic dictation and sight-singing abilities. Third, by adjusting the speed settings of the software, the tempo of sight-singing melodies can be quickly slowed down or sped up, which has proven to be effective in sight-singing instruction.

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Recommendation

Based on the research on the application of MuseScore software in sight-singing and ear-training courses, it is suggested that other researchers can carry out more extensive research and involve more diverse students from different institutions and backgrounds to participate in the use of MuseScore software. This would help in understanding the effectiveness of MuseScore software in various educational settings, thereby providing a more comprehensive understanding of its impact.

Future studies could also include students from different age groups and proficiency levels to evaluate how the software performs across a broader spectrum of learners. Comparative studies will also be conducted on MuseScore software and other digital tools in sight-singing and ear-training instruction.

Limitations and Further Exploration

The study should consider expanding the scope of the research to include a more diverse and larger sample size. The current sample of 60 students from a single university limits the generalizability of the findings. Future studies could include participants from multiple universities or different regions to provide a more comprehensive understanding of the impact of MuseScore software on sight-singing and ear-training abilities across a broader demographic of music students.

Another potential limitation that should be addressed is the relatively short duration of the intervention, which was limited to eight weeks. This period may not have been sufficient for students to fully adapt to the new software and for the effects to manifest comprehensively. Extending the study period to cover an entire academic semester or year would allow for a more thorough investigation into the long-term effects of integrating MuseScore software into the curriculum. This could also provide insights into how sustained use of the software might influence students' retention and application of sight-singing and ear-training skills.

The continuous upgrades and feature enhancements of MuseScore software as a limitation. It would be beneficial for future research to not only monitor these updates but also systematically evaluate how specific new features affect learning outcomes. For instance, conducting a series of studies that compare different versions of the software could provide valuable insights into which functionalities are most effective for teaching sight-singing and ear-training.

References

Ayderova, V. (2021). Music notation software as a visual-aural model in self-regulated practice. *Social Sciences, 11*(12), 344–360.

Bai, J. (2020). *The combination of sight-singing and ear-training teaching and digital technology: Research*. Master's thesis, Hebei Normal University.

Bauer, W. I. (2020). *Music learning today: Digital pedagogy for creating, performing, and responding to music* (2nd ed.). Oxford University Press.

Cohen, L., Manion, L., & Morrison, K. (2018). *Research methods in education* (8th ed.). Routledge.

Dammers, R., & LoPresti, M. (2020). *Practical music education technology*. Oxford University Press.

Dorfman, J. (2022). *Theory and practice of technology-based music instruction* (2nd ed.). Oxford University Press.

Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods, 41*(4), 1149–1160. https://doi.org/10.3758/BRM.41.4.1149

Gao, S. (2022). *The application of digital teaching methods in sight-singing and ear-training in higher normal education: A study*. Master's thesis, Northeast Normal University.

Gillespie, J. L. (2001). Melodic dictation scoring methods: An exploratory study. *Journal of Music Theory Pedagogy, 15*(2), 51–68.

Gordon, E. (2007). *Learning sequences in music: A contemporary music learning theory*. GIA Publications.

Citation
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Henry, M. L. (2011). The effect of pitch and rhythm difficulty on vocal sight-reading performance. *Journal of Research in Music Education, 59*(1), 72–84. https://doi.org/10.1177/0022429410397199

Karpinski, G. S. (2000). *Aural skills acquisition: The development of listening, reading, and performing skills in college-level musicians*. Oxford University Press.

Mayer, R. E. (2005). Principles of multimedia learning based on social cues: Personalization, voice, and image principles. In R. E. Mayer (Ed.), *The Cambridge handbook of multimedia learning* (pp. 201–212). Cambridge University Press.

Miksza, P., & Elpus, K. (2018). *Design and analysis for quantitative research in music education*. Oxford University Press.

Mona, D., & Hidayat, H. A. (2021). Utilization of Sibelius software in basic vocals education in the Department of Sendratasik, Universitas Negeri Padang. In *Ninth International Conference on Language and Arts (ICLA 2020)* (pp. 354–358). Atlantis Press.

Nair, S. M., You, J., Krishnasamy, H. N., Singh, G. K. S., & Siddique, M. (2024). Using Overture to enhance students' aural musical skills and motivation in learning. *Edelweiss Applied Science and Technology, 8*(4), 1966–1978.

Norman, T. D. (2023). Free music notation software and web-based applications. *Journal of General Music Education, 36*(3), 51–52. https://doi.org/10.1177/27527646231163852

Owens, P., & Sweller, J. (2008). Cognitive load theory and music instruction. *Educational Psychology, 28*(1), 29–45. https://doi.org/10.1080/01443410701413716

Peterson, H. (2006). Technology tips and tricks for music educators. *General Music Today, 19*(3), 36–43. https://doi.org/10.1177/10483713060190030110

Price, S. T. (2010). *The application of cognitive load theory to teaching music reading*. Doctoral dissertation, University of Georgia.

Schüler, N. (2021). Modern approaches to teaching sight-singing and ear-training. *Facta Universitatis, Series: Visual Arts and Music, 7*(1), 83–92.

Shinn, M. (2013). *Instant MuseScore*. Packt Publishing.

Sweller, J. (2011). *Cognitive load theory*. Springer.

Todea, D. (2015). The use of the MuseScore software in musical e-learning. *Virtual Learn*, 88–94.

Watson, M. (2018). MuseScore. *Journal of the Musical Arts in Africa, 15*(1–2), 143–147. https://doi.org/10.2989/18121004.2018.1534342

Xia, L. (2012). *Three ordinary college solfeggio teaching present situation*. Master's thesis, Central China Normal University.

Yu, Q. (2011). *Application research of software Auralia and Overture in the teaching of solfeggio and ear training*. Master's thesis, Hunan Normal University.

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