Enhancing Accordion Performance Through Self-Regulated Learning with Digital Technology: A Study at Hunan Normal University

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Abstract

Background and Aim: The dimensions of SRL theory provided an appropriate framework to explore students' self-regulatory development (de Bruijn-Smolders et al., 2016). and were used in the current study to examine the influence of CADENZA use on students' practice approach. The main objective was to determine the effectiveness of the CADENZA learning system-based teaching model in improving students' academic performance in accordion courses and to determine whether it can improve students' academic performance. Finally, based on the existing experimental design, researchers can apply CADENZA to teaching activities based on different fields, rather than being limited only to accordion teaching research. Such research can provide a more effective teaching model for educators in different fields.

Materials and Methods: In this study, 80 undergraduate students majoring in accordion at Hunan Normal University participated in the study, and the participants were divided into two groups: experimental group and control group. The experimental group was taught with CADENZA, while the control group was taught with traditional classroom teaching. After nine weeks of study, both groups of students were assessed on three aspects: Music Performance Techniques, Integrity of musical performance, and Musical expression. Then the hypothesis was tested using SPSS and a T-test. Finally, the results of using Cadenza to teach students the accordion are reported in the form of mean and standard deviation. To explore the effectiveness of teaching methods in the experimental group.

Results: Three variables included in the accordion teaching of cadenza—Music Performance Techniques, Integrity of musical performance, and Musical expression evaluation found that students' academic performance has been significantly improved, which is more effective than traditional teaching methods.performance, supporting the three hypotheses proposed in the study, and making the conceptual structure model effective.

Conclusion: First of all, the specific content of the operational teaching method can be innovated in future research. Complete the perfect combination of classroom and extracurricular teaching, and the seamless connection between digital technology teaching and practical teaching. Secondly, the fixed teaching procedure in the operational teaching method can be innovated in future research. Accordion teachers in normal universities need to change their teaching concepts, put students in the main position of learning, and innovate teaching methods through the transmission function of digital technology, so as to achieve the purpose of teaching based on materials. Finally, based on the existing experimental design, researchers can apply CADENZA to teaching activities on the basis of different fields, rather than being limited only to accordion teaching research; such research can provide a more effective teaching model for educators in different fields. These findings support existing research showing that digital tools can improve students' performance in accordion courses to some extent.

Keywords: Music Students; Digital Tools; Accordion; Higher Education; Cadenza

Introduction

The traditional face-to-face learning model has been widely accepted and used by numerous educational institutions around the world. However, it is mentioned that such learning pedagogy revealed a considerable disconnection with the modern digital world of the students and has failed to generate effective contribution to the student satisfaction, as well as learning experience and other learning outcomes (Singh et al., 2021). Nowadays, with the development of digital technologies, students in universities are becoming more and more reliant on informational technology and systems throughout the educational process, for instance, system registration, scheduling courses, tuition payment, e-library, and most

significantly, online lessons (Haleem et al., 2022). The emergence of digital technology has created a more flexible choice for traditional teaching methods, making teaching methods keep pace with The Times, and no longer limited to fixed places such as classrooms and piano rooms, making teaching methods efficient and epochal.

To date, there are no unique methodological approaches to learning to play the button accordion and accordion in China: mainly, the entire pedagogical process is based on borrowed Russian and Western methods, as well as on the educational developments of China in the beginning and middle of the last century, presented through the prism of digitalisation. The above makes it impossible to organise an effective educational process, including in the existing conditions of generational change, as well as the peculiarities of music education. For the further revival of the Chinese bayan-accordion art, it is relevant to apply modern pedagogical practices based primarily on interactive digital technologies (Smith, 2020).

The practice of accordion instrumental music is a multifaceted endeavor that involves a range of activities, behaviors, and thoughts required for accordion learning. In higher education institutions, students studying accordion instrumental music are often encouraged to use digital tools in order to increase proficiency (Bauer, 2020). On the other hand, experiments have shown that children who use digital tools early in their accordion learning are more likely to succeed (West, 2012). Furthermore, the incorporation of real-time display methods in interactive teaching systems allows for immediate feedback and engagement, benefiting both teachers and students during the learning process (Revere & Kovach, 2011).

The advent of Digital Tools has created a whole new environment for traditional accordion teaching, as students no longer need to be in the same classroom as the teacher to learn face-to-face.

The innovation of Digital Technology brings a lot of changes in the education field (West, 2012). The teaching method is the basic element of the teaching process and the completion of the teaching goal, and is an important means to improve the teaching effect. In the process of accordion teaching in normal colleges. The reasonable application of teaching methods plays an important role in cultivating high-quality talents. With the rapid development of science and technology. Digital technology has been closely related to People's Daily life and learning environment. In recent years, many schools have made a lot of attempts to combine digital technology with teaching work, and have achieved certain results, but there are still problems in teaching work, such as an inadequate grasp of methods and imperfect content design. In this regard, exploring and developing the application research of digital tools in the accordion major in normal universities has become a necessary link to comprehensively improve the timeliness of accordion teaching in normal universities. While digital tools are increasingly used in music education, there is limited research on their effectiveness in improving specific aspects of accordion performance, particularly through the lens of self-regulated learning.

At Hunan Normal University, face-to-face teaching and learning have been the primary method for accordion teachers and students, because traditional face-to-face learning can make the communication between teachers and students more intuitive. Compared to students in other university majors, it is argued that students in music majors have additional required practices and higher performance expectations, which are beyond the general demands of university life. And therefore, Educational institutions such as universities and colleges need to continue optimizing their educational approaches to cope with the shifting expectations of students regarding the standard of the learning experiences and the rapid technological changes (Bowen, 2012). Thus, as for modern accordion education, it is necessary to assess and evaluate the students' performance improvement and their perceptions of learning accordion through Digital Tools, to enhance the quality of such learning approach and the quality of students' learning.

Research Questions:
1. What is the relationship between using the Cadenza platform and the development of accordion Music performance techniques?
2. What is the relationship between using the Cadenza platform and the development of accordion Integrity of musical performance?

3. What is the relationship between using the Cadenza platform and the development of accordion Musical expression?

Research objectives:

1. To explore the influence of the cadenza technique on the improvement of students' performance techniques.

2. To explore the influence of cadenza technique on the improvement of the integrity of musical performance.

3. To explore the influence of cadenza technique on the improvement of musical expression.

Literature review

In the literature review, the researchers conducted a comprehensive review of the theories of digital technology and instrumental music learning, because in order to better support this research, it is necessary to root and reflect on the basic theories of digital technology learning and instrumental music learning. Then, taking accordion students of Hunan Normal University under the background of digital technology as the research object, it provides the literature basis for the relevant theories of accordion professional variables, as the framework of this study.

Information on digital technology

Advancements in digital technology (DT) are providing new ways to promote engagement and wider participation in music learning (Crawford & Jenkins, 2017). DT can offer contemporary approaches for creating, performing, and responding to music (Mazzola, 2010)and support learning in music classrooms in authentic and relevant ways (Ojala & Väkevä, 2015). Technologies typically used for instrumental learning include software for recording, repertoire selection, and note learning (Wan et al., 2023). There is an increasing variety of commercial software to support instrumental practice, such as feedback tools, practice logs, tuning and metronome gadgets, digital music libraries, and accompaniment tools (Wan et al., 2023). Despite the growing availability of digital music tools (Spilker, 2017), a lack of use in facilitating self-regulatory processes during instrumental practice.

Although research has revealed the potential of DT to support self-regulation in classroom learning (Yot-Domínguez & Marcelo, 2017), limited scholarly literature exists about this in instrumental learning. Software applications that provide feedback during instrumental practice can assist in improving note and rhythm accuracy, and accompaniment tools can promote intrinsic motivation (Colwell & Hewitt, 2015). Smart Music offers both of these features, but its automated assessments can provide inadequate performance feedback (Deeva et al., 2021). An emerging avenue of research explores DT-mediated environments in facilitating SRL in instrumental practice. iSCORE, an e-portfolio, fosters self-regulatory development through supporting communication of ideas, feedback, and sharing of recordings (Bures et al., 2012). The web-based application Cadenza enables teachers to share lesson ideas and recordings with students and promotes SRL through written reflections, feedback, goals, and practice logs (Upitis & Abrami, 2019). These studies establish the beginnings of literature on self-regulatory development with DT.

Cadenza (http://www.cadenzamusictool.ca) is an online electronic portfolio that is used by teachers and students, both during lessons and in weekly practice. Research shows that online electronic portfolios can support student learning in a variety of subject areas, including music, especially when digital tools are designed to support student self-regulation (Apuzzo, 2001).

Cadenza was designed to support self-regulation by inviting students to set goals, engage in effective task strategies, and reflect on their practice. The evidence shows that students with higher levels of self-regulating behaviours generally develop strong performance skills and experience more fulfillment as musicians (CADENZA, 2013).

Accordingly, we hypothesized that by embedding self-regulating features into Cadenza, students would experience successful learning and develop their musicianship.

Music performance techniques up

Techniques encompass a range of movements and skills that are essential for proficient playing. These techniques involve hand and finger movements, as well as upper-body movements, such as trunk and arm actions (McPherson et al., 2006). Performance competence is built on the playing technique, with skilled players acquiring the motor skills to coordinate the movement of a multi-joint limb to produce a fluent playing style. Early musical theorists realized the playing technique had not kept pace with the changes in the music environment, which called for greater bodily participation (Anufrieva & Tsarev, 2017). This resulted in the realization that the technique needed to be efficient, which implied making muscle use more economical by expending only the muscular energy needed for specific procedures, so that the energy load was manageable and the technique sustainable both during a performance and in the long term (Ortmann, 1929/1981).

Historically, all performers had had the same difficulties in 'making music' because there is an innate variable in the act of performing: the expression. What do the performers do? The most basic requirement is that a performer should produce the correct notes, rhythms, dynamics, etc. of a musical idea (Clarke, 2002, p. 59). In this sense, we may define the interpretation as a mechanical process; nevertheless, an interpretation without expression is not musical. Thus, Erick Clarke clarified that it was also necessary 'to go beyond' due to the expert performers are obliged to transmit a musical idea and recreate expressively the score. This statement could be controlled and measured because, in an interpretation, one may observe whether the performer had played the exact musical symbols of the score or not, but the issue is more subjective when we value expressivity.

Measurement of Music performance techniques up

The technique demonstrated significant direct effects on assessments of overall performance quality and musical expression. All musicians agree that music techniques need to be stable, reliable, accurate, flexible, and immediate (Watkins & Scott, 2023). Musical expression also demonstrated a significant direct effect on overall perceptions of performance quality (Russell, B. 2015). He did this by using AMPQ (The Aural Musical Performance Quality (AMPQ) measure was created to measure overall performance quality, technique, musical expression, tone, intonation, rhythmic accuracy, articulation, tempo, dynamics, tone character, and interpretation). A path analysis of the 232 performance evaluations provided empirical support for the hypothesized model (Russell, B., 2015).

Measurement techniques in music performance have evolved significantly, focusing on various aspects such as body movement, sensorimotor processes, ensemble performance, and expressive timing (Palmer & Deutsch, 2012). These diverse methodologies collectively contribute to a deeper understanding of music performance techniques and the intricate processes involved in creating expressive and engaging musical renditions.

Integrity of musical performance

O'Dea (2000) mentioned that the integrity of musical performance is a complex concept that encompasses various factors. It involves the coherence, unity, and completeness of a performance, as well as the responsibility and accountability of the performers. Central to the musical enterprise is performance, the process of getting the work to the listener. Formally understood, performances are instantiations of works subject to certain structural and historical constraints. Less abstractly, performances, as goal-directed activities, are subject to various contextual and agency-related conditions that make for their success as coherent occasions of a special sort and as skilled actions for which credit can be taken. Those conditions determining the coherence of performance and the responsibility of agents in performing, I call Integrity conditions (McFall, 1987). Excellence in music performance involves two major components like a genuine understanding of what the music is about, its structure and meaning, and a complete mastery of the instrumental technique (Gabrielsson, 1999).

The integrity of musical performance encompasses various aspects such as artistic integrity, performance stability, and authenticity. Artistic integrity involves deep interpretological evaluations, understanding the compositional structure, and utilizing the stylistic thesaurus to convey the composer's

intentions (Godlovitch, 1993). Performance stability focuses on the reliability of musicians in executing error-free performances, maintaining cognitive processes, and creating emotional stability during stressful periods. Authenticity in musical performance has been a significant focus, especially in the early music movement, aiming to recreate performances faithful to historical practices or composer intentions, although the concept has evolved into historically informed performance in recent years (Young, 2013). While authenticity is crucial for delivering the intended work, some flexibility is allowed for practical reasons, with deliberate inauthenticity being rare (Davies, 1987).

Measurement of the Integrity of Musical Performance

The measurement of integrity in musical performance involves assessing the coherence, unity, completeness, and accountability of the performance (Godlovitch, 1993). The measurement method includes objective technical index, subjective artistic feeling, audience feedback, and so on. Objective technical indicators in music performance can be measured through various parameters such as tempo, dynamics, and microstructure analysis. Studies have shown that different techniques can be used to represent the perceptually salient characteristics of performances, with global measures performing slightly better than local measures, and raw and absolute measures outperforming normalized and derived measures (Timmers, 2004). Subjective artistic feeling in music performance encompasses a range of elements, including expressive timing, dynamics, and emotional experiences. Studies highlight the importance of subjective well-being in evaluating one's life satisfaction, positive emotions, and overall happiness (Anand & Kumar, 2013). The audience is the final recipient of a musical performance, and their feedback is of great significance in evaluating the integrity of a musical performance. In the measurement, the performance of the performer can be understood through the reaction and evaluation of the audience (York, 2019). The measurement of the integrity of music performance is a complex and comprehensive process, which needs to be combined with objective technical indicators, subjective artistic feelings, and audience feedback. Only by ensuring that musical performances meet certain standards in all aspects can we realize the complete transmission of musical works and the full display of artistic value. Therefore, in music teaching and performance practice, we should attach great importance to the training and cultivation of integrity, and constantly improve our performance level and artistic accomplishment.

Musical expression

"Playing with feeling" is central to music making and is referred to more formally as playing with "expression" (Schubert, 2022). Research has shown that both music students and teachers think that expression is spontaneous and creative. Musical (Abramo & Reynolds, 2015). expression provides benefits in the cognitive area, develops abilities, skills, habits, and stimulates both the affective-volitional schoolchildren. It is also intended for all students, not only for those with musical talent, and that favors freedom, creative enhancement, activity, and evolutionary progress of the school through play. These factors allow the overall development of the school and its relationship to daily life, as the musical experiences are consistent with the interests of the students because they are naturally performed, and because the music itself represents something fun for them (Jorgensen, 1997).

The artistic expression of feeling in music consists in aesthetic deviation from the regular, from pure tone, true pitch, even dynamics, metronomic time, rigid rhythms, etc (Seashore, 1942). Mithen argues that musicality is a fundamental part of being human, that this capacity is of great antiquity, and that a holistic protolanguage of musical emotive expression predates language and was an essential precursor to it (Mithen et al., 2006). Drawing on previous research, the author suggests that performance expression is best conceptualized as a multi-dimensional phenomenon consisting of five primary components: (a) Generative rules that function to clarify the musical structure; (b) Emotional expression that serves to convey intended emotions to listeners; (c) Random variations that reflect human limitations about internal time-keeper variance and motor delays; (d) Motion principles that prescribe that some aspects of the performance (e.g. timing) should be shaped in accordance with patterns of biological motion; and (e) Stylistic unexpectedness that involves local deviations from performance conventions (O Doherty, 2019).

Measurement of Musical Expression

The generation procedure of musical expression consists of two procedures: image estimation and derivation of parameter values of musical expressions. In the image estimation procedure, an adjective, an image word, is mapped in a Kansei space. In the parameter values derivation procedure, parameter values of musical expression, a tempo, a volume, and a length of a note are obtained in the form of mapping from a Kansei space to a parameter space by the fuzzy inference method (Suzuki & Onisawa, 2010).

Music performance assessment is a highly subjective task, often relying on experts to gauge both the technical and aesthetic aspects of the performance from the audio signal.

We propose using Deep Neural Networks (DNNs) for the task and compare their performance against a baseline model using standard and hand-crafted features. We show that, using input representations at different levels of abstraction, DNNs can outperform the baseline models across all assessment criteria (Byun et al., 2019). Each evaluator completed a criterion-specific rating scale for each performer and assigned each performance a global letter grade not shared with other evaluators or with the performer. Interjudge reliability was determined for each group's rating scale total scores, subscale scores, and the letter-grade assessment (Bergee, 2003).

Methodology

Population and sample

The population of this study was 240 first-year students majoring in music performance in the College of Music, Hunan Normal University. Aged between 18 and 20, these students take 2 accordion specialist lessons per week at the university, each lasting 45 minutes. The target group is mainly students of various directions of music performance majors, whose major directions are vocal music, piano, instrumental music, and the other three mainstream music directions. Therefore, such a diverse professional population is desirable.

As accordion courses in Hunan Normal University usually adopt group teaching, in order to ensure the credibility and accuracy of the study, the purposive sampling technique is adopted in this study. The total Sample of this study was 80 people. One class, consisting of 40 students, and 40 students from another class were selected as the control group and experimental group.

Population characteristics encompass a wide range of factors that define and shape a population, including demographic features, growth patterns, and environmental interactions. Studies like those by Sinner et al (Lutz & Prinz, 1994). Sample size is a critical aspect in research, influencing the study's ability to detect meaningful differences (Desu, 2012). It is essential for ensuring studies have adequate statistical power to discern treatment effects accurately (Sakpal, 2010). Sample size determination is based on the number of experimental units, which are the smallest entities allocated to groups for statistical inference (Devane et al., 2004). Overall, sample size, defined as the number of subjects in a study, plays a pivotal role in research across various disciplines, impacting the precision of estimates and the robustness of study findings (Lakens, 2022).

Experimental framework

The course period of this study is 9 weeks. 80 students majoring in accordion minor in Hunan Normal University are divided into 2 groups: the Experimental group of 40, Control group. Group B has 40 members. The Music Performance Techniques (H1), Integrity of musical performance (H2), and Musical expression (H3) of the two groups of students were tested respectively before the beginning of the course to understand their current grades.

This study takes Cadenza as the course platform. Students of Experimental Group A need to conduct all communication in the course in "Cadenza", while students of Control Group B still learn in the traditional face-to-face way. The students in both groups were tested again after the 8-week course to test these variables in the study.
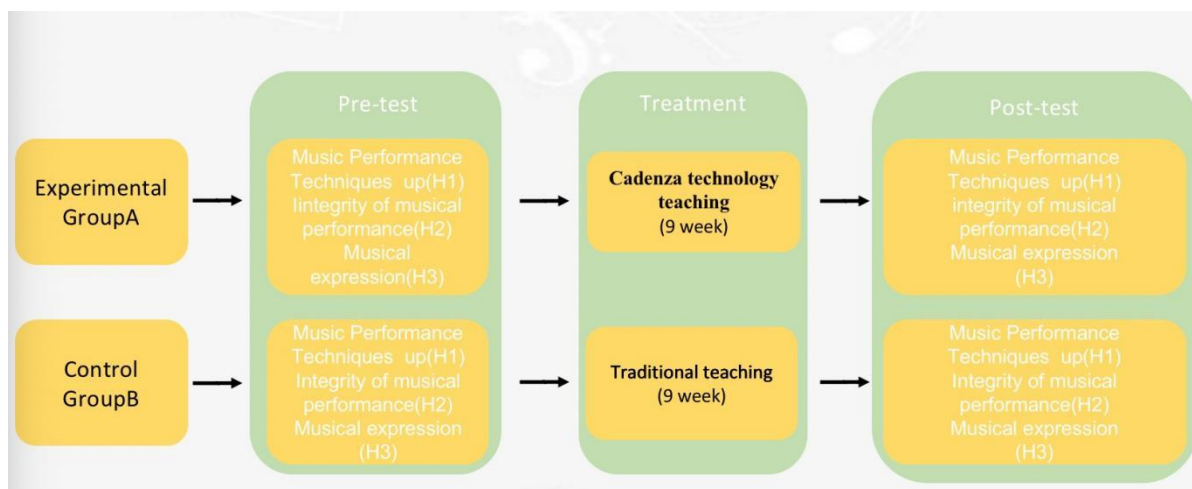
Figure 1 Experimental Framework

Descriptive Statistics of Variables

In order to ensure that the students in the control group and the experimental group had the same ability at the beginning of the experiment, an independent sample T-test was conducted for the three variables of this study, respectively, before the experiment. By comparing the Performance of the two groups of students in Music Performance Techniques, Integrity of musical performance, and Musical expression, the following table shows the results of data analysis.

Table 1 Summary of pre-test results

Variable	Group	SD	Mean	N
Music Performance Techniques up	Control Group	4.762	65.7	40
	experimental group	5.726	66.925	40
Integrity of musical performance	Control Group	4.817	65.075	40
	experimental group	4.605	65.85	40
Musical expression	Control Group	5.751	64.45	40
	experimental group	4.785	64.338	40

Table 2 T-tests for Pre-test Scores Between the Two Groups.

Variable	Mean Differences	p
Music Performance Techniques up	1.225	0.301
Integrity of musical performance	0.775	0.464
Musical expression	0.225	0.85

To compare the pre-test scores of Music Performance Techniques up, Integrity of musical performance and Musical expression between the experimental group and the control group, Independent

sample T-test was conducted on the three variables respectively, and according to the results, there was no significant difference in the pre-test results of the two groups of Music Performance Techniques up (t=1.04, p=0.301>0.05), the two groups were comparable. There was no significant difference in the pre-test results of Integrity of musical performance between the two groups (t=0.736, p=0.464>0.05), and the two groups were comparable. There was no significant difference in the pre-test results of Musical expression between the two groups (t=0.19, p=0.85>0.05); the two groups were comparable. It should be noted that while the pre-test results may not represent an accurate estimate of the students' skills in this study, the skill levels of the students in the two groups were comparable, so it can be concluded that the differences between the two groups would not have an impact on the results based on the pre-test results.

Descriptive Statistics of Music Performance Techniques up

Descriptive statistical methods of central tendency and dispersion degree were used to analyze the pre-test and post-test scores of the Music Performance Techniques in the experimental group and the control group. The following are the data analysis results.

Table 3 Summary of the mean results of Music Performance Techniques in the experimental group

	Mean	SD	N
Pre-test score	66.925	5.726	40
Post-test score	85.3	7.104	40

Table 4 Summary of the mean results of Music Performance Techniques in the Control group

	Mean	SD	N
Pre-test score	65.7	4.762	40
Post-test score	69.4	5.017	40

As can be seen from the above table 3 and table 4, there is a 0.01 level of significance between Post-test and Pre-test in the experimental group (t=11.688, p=0.000), and the specific comparison difference can be seen that the average value of Post-test (85.30) will be significantly higher than the Pre-test average (66.925). There was a 0.01 level of significance between Post-test and Pre-test in the control group (t=10.123, p=0.000), and the specific comparison difference showed that the mean value of Post-test (69.40) was significantly higher than that of Pre-test (65.70). The average difference between pre-test and post-test in the experimental group (18.375) was significantly higher than that between the control group (3.7). From this point of view, the experimental group improved the average score more significantly.

Descriptive Statistics of the Integrity of Musical Performance

The pre-test and post-test scores of the Integrity of musical performance of students in the experimental group and the control group were analyzed using descriptive statistical methods. The following are the results of data analysis.

Table 5 Summary of the mean results of the Integrity of musical performance in the experimental group

	Mean	SD	N
Pre-test score	65.85	4.605	40
Post-test score	83.625	5.719	40

Table 6 Summary of the mean results of the Integrity of musical performance in the Control group

	Mean	SD	N
Pre-test score	65.075	4.817	40
Post-test score	69	4.723	40

As can be seen from the above table 5 and table 6, there was a 0.01 level of significance between Post-test and Pre-test in the experimental group (t=13.906, p=0.000), and the specific comparison difference showed that the average value of Post-test (83.625) was significantly higher than that of Pre-test (65.85). There was a 0.01 level of significance between Post-test and Pre-test in the control group (t=4.127, p=0.000), and the specific comparison difference showed that the mean value of Post-test (69) was significantly higher than that of Pre-test (65.075). The average difference between pre-test and post-test in the experimental group (17.775) was significantly higher than that between the control group (3.925). From this point of view, the experimental group improved the average score more significantly.

Descriptive Statistics of Musical Expression

The pre-test and post-test scores of the Musical expression of students in the experimental group and the control group were analyzed using descriptive statistical methods. The following are the results of the data analysis.

Table 7 Summary of the mean results of Musical expression in the experimental group

	Mean	SD	N
Pre-test score	64.225	4.785	40
Post-test score	85.85	5.512	40

Table 8 Summary of the mean results of Musical expression in the Control group

	Mean	SD	N
Pre-test score	64.45	5.751	40
Post-test score	70.5	5.104	40

As can be seen from the above tables and Table 8, there was a 0.01 level of significance between Post-test and Pre-test in the experimental group (t=18.081, p=0.000), and the specific comparison difference showed that the average of Post-test (85.85) was significantly higher than that of Pre-test (64.225). There was a 0.01 level of significance between Post-test and Pre-test in the control group (t=4.503, p=0.000), and the specific comparison difference showed that the mean value of Post-test (70.5) was significantly higher than that of Pre-test (64.45). The average difference between pre-test and post-test in the experimental group (21.625) was significantly higher than that between the control group (6.05). From this point of view, the experimental group improved the average score more significantly.

Results

Hypothesis 1：There was no significant difference between different groups for the Pre-test (t=-1.04, p=0.301>0.05); the two groups were comparable.

The experimental group showed a statistically significant improvement in Music Performance Techniques (t=-11.562, p=0.000), representing a large effect size, and the specific comparison difference can be seen that the average value of the Control Group (69.40) was significantly lower than the average of the experimental group (85.30), Mean difference (18.9. The experimental group had better results. This improvement suggests that the Cadenza platform can meaningfully enhance students' technical skills.

Hypothesis 2 : There was no significant difference between groups for the Pre-test (t=-0.736, p=0.464>0.05); the two groups were comparable.

The experimental group showed a statistically significant improvement in Integrity of musical performance (t=-12.471, p=0.000), representing a large effect size, and the specific comparison difference can be seen that the average value of the Control Group (69.00) is significantly lower than the average of the experimental group (83.62), Mean difference (14.62). This improvement suggests that the Cadenza platform can meaningfully enhance students' technical skills.

Hypothesis 3 : There was no significant difference between different groups for the Pre-test (t=0.19, p=0.85>0.05); the two groups were comparable.

The experimental group showed a statistically significant improvement in Musical expression (t=12.923, p=0.000), representing a large effect size, and the specific comparison difference can be seen that the average value of the Control Group (70.5), was significantly lower than the average of the experimental group (85.85), Mean difference (15.35). The experimental group had better results. This improvement suggests that the Cadenza platform can meaningfully enhance students' technical skills.

Table 8 Summary of Hypothesis Testing and Results

Hypotheses	Statement	Result
H_01	The students' Performance Techniques are not different between the students in the control group and the experimental group.	Reject
H_02	The integrity of musical performance is not different between the students in the control group and the experimental group.	Reject
H_03	The students' musical expression is not different between the students in the control group and the experimental group.	Reject

Conclusion

This study is an in-depth and comprehensive investigation into the use of CADENZA in accordion teaching. The purpose of the study was to determine the extent to which CADENZA technology can improve students' Music Performance in accordion learning Techniques, Integrity of musical performance, and Musical expression.

In actual teaching, by setting relevant learning content and tasks on CADENZA, teachers can timely understand the learning progress of students, find errors and give feedback, and better plan the future improvement direction for students. This kind of intuitive display of students' learning content. It has significantly improved students' Music Performance Techniques, Integrity of musical performance, and Musical expression.

Through the study of this paper, the researchers found that the current accordion teaching method of Hunan Normal University has some limitations on the development of teaching content and the training of talents. Because the study of art majors requires a lot of time to practice, and different practice durations lead to different professional abilities and other aspects of students. However, since there is no way to control the practice time, this will be the limitation of this study. In the face of the current rapid development of a new media society, the traditional accordion teaching method is not fully adapted to it. Therefore, it is necessary to combine the two and strengthen the application of digital technology in the teaching process, such as: using digital technology to enhance learning interest and innovate learning environment; Innovating teaching carriers, adjusting teaching methods and other means to keep pace with The Times to innovate accordion teaching methods, so that the teaching form is more novel, the teaching system is more sound, to fundamentally improve the effectiveness of teaching methods. However, the gains and

shortcomings of the research coexist. In the research process, only students majoring in accordion at Hunan Normal University were selected as the survey objects in the survey design of the sample size. Therefore, the data analysis results of this study cannot represent the views of all teachers and students majoring in accordion in normal universities. Therefore, researchers also deepened the study and research of relevant knowledge to put forward more appropriate countermeasures in future research.

All in all, the results of this study show that integrating CADENZA into accordion teaching can be an effective and successful model for teaching accordion, which provides certain research value for enriching the accordion teaching model and future teaching research and practice.

Recommendation

First of all, in the process of learning with CADENZA, students can also recognize their own mistakes in time, so that they can effectively get further development suggestions. On the other hand, the results of this study provide valuable references for accordion teachers in normal universities. By referring to the structural model and influencing factors of this study, accordion teachers can use the model of this study to improve the quality of courses when using cadenza according to the variables of this study. Since the validity and reliability of the survey tools in this study are effective, they can also be applied to the teaching of other Musical Instruments, and other related majors can also make corresponding changes to their current teaching mode according to the survey results of this study or the structural model of this study. The application of digital technology in accordion teaching also provides beneficial enlightenment for future accordion teaching and helps to promote the sustainable development of accordion teaching.

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