Development of Digital Education Strategies for Music Education in Guangxi Universities of China

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Abstract

This research consists purposes were 1. to explore how to integrate digital resources of ethnic music with artificial intelligence in teaching to improve the effectiveness of ethnic music inheritance 2. to explore how to leverage the opportunities presented by integrating digital resources of ethnic music with artificial intelligence in teaching to enhance students' learning motivation 3. to research how to utilize students' learning motivation factors to promote the effectiveness of ethnic music inheritance and 4. to explore how students' learning motivation can address the challenges of integrating digital resources and artificial intelligence into the teaching of ethnic music in order to improve the effectiveness of ethnic music inheritance. This study adopts quantitative research a choice supported by strong theoretical foundations. with the design strictly based on the distinctive characteristics of the sample population. The population comprises students from eight music-related departments at a conservation college in Guangxi Province, collected a total sample size of 501. The research results found that 1) Basic digital tools, such as music notation editing software (e.g., Sibelius) and school-built online learning platforms, have a high adoption rate in teaching, exceeding 70%. However, the classroom application rate of advanced technologies such as VR/AR and AI composition is less than 25%. Meanwhile, the teaching conversion rate of digital tools specifically for ethnic music, such as the Zhuang folk song database, is only 29% 2) Guangxi is an area with profound local folk music and its folk music needs to be excavated, researched and the situation and problems of local folk music in music education in colleges and universities. the integration of teaching design and cultural inheritance function of digital resources should be strengthened 3) The digital education strategy can effectively stimulate the potential of students majoring in music, promote the integration of digital and folk music, and inject new impetus into the high-quality development of music education in colleges and universities in Guangxi and 4) This paper puts forward the path of reconstructing the curriculum system, constructing the music digital education strategy, improving students' learning motivation,

enhancing students' music literacy and so on, which provides feasible strategies for realizing the effect of national music inheritance.

Keywords: Digital Education Strategies, Digital Resources for Ethnic Music, AI-integrated Teaching

Introduction

The integration of artificial intelligence and music education faces multiple real-life tensions, with a high technological threshold for adapting to complex teaching scenarios and diverse situations, and is prone to weakening the humanistic core in artistic creation due to excessive dependence. The implementation level is constrained by network infrastructure, particularly in resource poor areas. The performance of acoustic models not only depends on specific data and scenarios, but also requires deep professional knowledge support, which restricts their universality and accessibility. (Dugan, J. P., and Komives, S. R, 2010) These structural contradictions constitute the starting point of this study. Students have clear learning motivation, reducing learning barriers (such as difficulty accessing resources or reading topics) and about 50% of music students' enthusiasm and participation change. There is an impact on the acceptance of artificial intelligence. (Chen, H., and Sensai, P., 2024)

In recent years, the rapid advancement of digitalization in higher education has brought unprecedented opportunities for the inheritance of ethnic music culture. Especially in Guangxi, a region with numerous ethnic groups, folk music culture has become a new research area in higher education music education. This study analyzes the problems faced by music students in Guangxi universities in the integration of resources and artificial intelligence in educational development, explores strategies for enhancing digital technology, promotes the synergistic improvement of students' learning motivation and musical literacy, and contributes to the high-quality development of music education in Guangxi universities. (Pitts, S. E., and Kwami, D., 2020)

This dilemma is not in line with the dual mission of inheriting ethnic culture and digital transformation of Guangxi University of Arts and there is also a gap with the requirements of activating traditional cultural resources in the national cultural digitalization strategy. There are differences in students' music literacy and individual differences among students are an undeniable factor in the cultivation of music literacy. Different students have differences in music interests, abilities, learning styles and other aspects. Therefore, this study promotes the development of ethnic music to strengthen ethnic music education in universities.

The Purposes

1. To explore how to integrate digital resources of ethnic music with artificial intelligence in teaching to improve the effectiveness of ethnic music inheritance.

2. To explore how to leverage the opportunities presented by integrating digital resources of ethnic music with artificial intelligence in teaching to enhance students' learning motivation.

3. To research how to utilize students' learning motivation factors to promote the effectiveness of ethnic music inheritance.

4. To explore how students' learning motivation can address the challenges of integrating digital resources and artificial intelligence into the teaching of ethnic music in order to improve the effectiveness of ethnic music inheritance.

Literature Review

1. Research on the Relationship between Digital Education Strategies and Learning Motivation

According to the diversification of digital resources, enrich the content in the teaching situation, and take stimulating learning motivation as the premise. Digital resources of national music (such as digital audio, short video, and virtual instruments) are proposed to expand the transmission path of national music. Research shows that digital resources can significantly enhance students' interest in national music, thereby enhancing learning motivation. (Caamaño Liñares, T., Rodríguez Rodríguez, J., Castro Rodríguez, M., and Marín Suelves, D., 2023) In the study of Liu Sanjie's ballads, it is found that short videos make young people more willing to contact and participate in national music activities. Online digital resources (such as Liusanjie virtual song fair) encourage users to participate in singing, integrate into digital situations, and stimulate enthusiasm for participation. The digital reproduction of national music enhances learners' interest in local music culture, which translates into learning motivation. (Li and chaiyason, 2024)

2. Research on the Effectiveness of Digital Education Strategies in the Inheritance of Ethnic Music

Through the field survey in Hechi, Guangxi, it is found that the Liu Sanjie ballad is incorporated into the curriculum system of colleges and universities, and combined with multimedia resources such as audio and short video. (Li and chaiyason, 2024) In the study, it is emphasized that national musical instruments are the symbol of national cultural identity. In Russia, digital technology is widely used in the teaching and dissemination of national instrumental music, and students' participation is enhanced through digital resources. However, the empirical support for learning effectiveness and inheritance is insufficient; The study emphasized that the integration of teaching and inheritance of digital resources should be strengthened in the future. (Caamaño

Liñares, T., Rodríguez Rodríguez, J., Castro Rodríguez, M., and Marín Suelves, D., 2023) In view of the fact that the research on the digital resources of ethnic music has less effect on the inheritance of ethnic music, especially the lack of empirical exploration on the inheritance effect of ethnic music in colleges and universities in Guangxi.

3. Research on the correlation between learning motivation and the effectiveness of ethnic music inheritance

The combination of traditional folk songs and electronic music, the use of short video platforms to disseminate students' works, and the development of online folk music have not only enhanced the practical significance of learning, but also stimulated students' learning motivation. (Wang, Y., & Zhang, H., 2022) The use of digital tools for melody reconstruction, rhythm change and national style integration, promote the creation of national music. However, how ethnic music education can jointly stimulate learning motivation, if it can effectively stimulate learners' interest and participation, will also become an important help for the inheritance of ethnic music. (Chen & sensai, 2024) To sum up, learning motivation has a direct impact on the effectiveness of national music inheritance.

4. The mediating role of learning motivation

The digital resources of national music are increasingly widely used in national music education and cultural heritage. As an important variable of educational effect, learning motivation plays a key role in the digital inheritance of national music. (Ali, J. K. M., Shamsan, M. A. A., Hezam, T. A., and Mohammed, A. A., 2023) For Indonesian college students, the study found that extrinsic motivation has a more significant driving effect on students' learning behavior. In the inheritance of national music, especially the combination of digital resources, interactive teaching, guidance and other external incentives, can more effectively enhance students' participation. The research on Guangxi Zhuang Liusanjie ballad emphasizes that the digital resources of national music are an important source to stimulate learning motivation. The study found that when students recognize the importance of national music inheritance through digital resources, their learning motivation is significantly enhanced. (Li and chaiyason, 2024)

Methodology

This study employs a quantitative research approach. The research method is as follows.

1. Population and sample groups in the research include

This study employed stratified random sampling, the design of which was strictly based on the population heterogeneity characteristics of the research subjects. The core theoretical basis is derived from the following

literature conclusions: Professional stratification is based on the significant disciplinary differences in music programs at Guangxi universities: Ethnic music performance programs place greater emphasis on the inheritance of traditional skills and have a lower acceptance of digital technology; while composition and music education programs, due to teaching needs, utilize digital technologies more deeply. Therefore, stratifying by major can prevent the characteristics of a single major from obscuring the overall pattern and ensure that the digital practices of each discipline are fully reflected. sample groups music teachers and students in Guangxi universities, covering eight music-related majors: ethnic music performance, composition and compositional theory, music education, musicology theory, recording arts, popular music, conducting, and music therapy. The total sample size was 501.1) Student sample sampling Overall characteristics: Guangxi's colleges of music have a total of 8 music-related majors, with a total of about 3,900 students. The proportions of each major are as follows: Music Performance 30%, Composition and Compositional Techniques Theory 20%, Musicology 30%, and other majors 20%. Sample size calculation: The total sample size was determined according to the social science research standards (confidence level 95%, allowable error ±5%), and the sample size of each stratum was allocated proportionally and 2) Teacher sample sampling Overall characteristics: The total number of teachers in several universities is stratified by two dimensions: teaching experience and professional title.

2. Research tools include

Quantitative Data (Questionnaire Survey): A formal "Questionnaire on the Current Status of Digital Innovation in Music Education" was designed, covering multiple dimensions such as the use of digital teaching resources, teachers' digital teaching capabilities, and students' digital learning experiences. The questionnaire was distributed to all teachers and students through the school's teaching management system, using stratified random sampling to ensure the sample covered teachers and students from different majors, grades, and teaching experience.

3. Data Collection

Questionnaire Design Referencing established domestic and international scales such as the *Music Education Digital Literacy Scale* (Pitts, S. E., and Kwami, D, 2020) and considering the specific circumstances of universities in Guangxi, a questionnaire was designed covering multiple dimensions, including students' digital learning experience and teachers' digital teaching practices. Likert scale items were also included (1 - very dissatisfied, 5 - very satisfied). During the design process, two rounds of expert consultation (inviting 5 experts in the field of digital music education) and a pre-survey (selecting 50 students and 10 teachers) rigorously tested and optimized the questionnaire's content validity and reliability, effectively ensuring the reliability of the questionnaire's quality.

Distribution and Collection: Questionnaires were distributed to selected student samples via the Wenjuanxing platform from May to June 2025. The questionnaire link was pushed through various channels, including the school's academic affairs system and class groups, clearly stating the completion requirements and deadline. To improve the questionnaire, return rate and quality, the research purpose and significance were briefly explained at the beginning of the questionnaire, while a commitment was made to strictly protect personal information. Reminders were sent one week before the deadline and on the deadline itself. Ultimately, 501 valid questionnaires were successfully collected, fully meeting the sample size requirements.

4. Data Analysis

The 501 collected questionnaires were processed using SPSS 26.0 and AMOS 27 software. The completeness and accuracy of the data were checked, and missing and outlier values were handled appropriately. For missing values, if the missing percentage was less than 10%, multiple imputation was used to fill in the gaps. For outliers, methods such as box plots were used for accurate identification, and corrections or deletions were made based on the actual situation. After data cleaning, the data quality was ensured to fully meet the analytical requirements.

5. Statistical used in research

To improve the questionnaire, return rate and quality, the research purpose and importance were explained at the beginning of the questionnaire, a reasonable time limit for answering was set and certain reward measures were provided. After collecting the questionnaires, invalid questionnaires were removed, and SPSS statistical software was used to enter and clean the valid questionnaire data to prepare for subsequent analysis.

Results

This Research The researcher can classify the research results as follows

1. Explore how to integrate digital resources of ethnic music with artificial intelligence in teaching to improve the effectiveness of ethnic music inheritance.

The study fully confirms that Guangxi Arts University has initially completed the basic construction of digital music education from scratch, but there is still considerable room for improvement in terms of deep integration. At the tool application level: Basic digital tools, such as music notation editing software (e.g., Sibelius) and school-built online learning platforms, have a high adoption rate in teaching, exceeding 70%. However, the classroom application rate of advanced technologies such as VR/AR and AI composition is less than 25%. Meanwhile, the teaching conversion rate of digital tools specifically for ethnic music, such as the

Zhuang folk song database, is only 29% (Digital Innovation in Music Education Development at Guangxi Arts University.docx). This indicates that the school's application of digital tools is still concentrated at the basic level, and the promotion and application of advanced technologies and tools specific to ethnic music urgently need to be strengthened.

At the curriculum integration level: For theoretical courses such as History of Ethnic Music and Musical Aesthetics, digital modules account for 37%, with extensive use of digital scores, audio-visual materials and other teaching aids, enriching the content and format of instruction to some extent. However, for performance courses, such as Zhuang Tianqin Performance and Dong Grand Song Singing, the digital integration rate is only 25%. Teachers generally believe that the traditional apprenticeship teaching model is more suitable for the inheritance of ethnic music performance skills and hold a cautious attitude towards the application of digital technology. This reflects an imbalance in curriculum integration, with an emphasis on theory over practice.

In terms of resource development: The school has begun building a basic digital archive of ethnic music, currently including recordings of 200 Zhuang folk songs and other materials. However, compared with leading institutions such as the Central Conservatory of Music in the field of digital music education, it lacks systematic immersive resources such as virtual folk scenes and interactive sheet music. This gap in resource development limits students' in-depth experience and understanding of ethnic music and also affects the improvement of digital teaching effectiveness.

Table 1 Correlation Analysis Results between Dimensions

Dimension	Digital resources of ethnic music	Artificial intelligence integrated teaching	learning motivation	The effectiveness of inheriting ethnic music	Student music literacy
Digital resources of ethnic music	1				
Artificial intelligence integrated teaching	0.456**	1			
learning motivation	0.417**	0.469**	1		
The effectiveness of inheriting ethnic music	0.409**	0.458**	0.479**	1	

Student music literacy	0.470**	0.429**	0.490**	0.493**	1

Data source: self-collation

2. Explore how to leverage the opportunities presented by integrating digital resources of ethnic music with artificial intelligence in teaching to enhance students' learning motivation.

Teachers and students from different majors, years of teaching experience/grades exhibit significant differentiation in their digital innovation practices.

Major Differences: The Music Education major, due to its explicit inclusion of digital teaching ability in its training objectives, scored highly in digital tool application, achieving 3.5 out of 5. Faculty in this major actively utilize digital technology in teaching and students receive more practice in a digital learning environment. In contrast, the Ethnic Music Performance major, which emphasizes original ecological inheritance, has a lower acceptance of technological intervention, scoring only 2.7 in digital tool application. These differences in professional training directions and philosophies have led to a significant gap in digital innovation practice between the two majors.

Intergenerational differences: young teachers with ≤3 years of teaching. experience, having grown up in the digital age, have a stronger ability to accept and apply new technologies, scoring 3.6 points in digital literacy. Teachers with ≥10 years of teaching experience, influenced by traditional teaching methods and habits, face obstacles in adapting to digital technology, scoring only 2.8 points in digital literacy. Among students, senior students, having undergone years of digital learning, scored 1.2 points higher than first-year students in digital creation abilities, such as electronic adaptations of ethnic music ($p<0.001$), demonstrating the cumulative effect of increasing digital literacy with learning time and practical experience.

Related analysis: Exploratory analysis is conducted on the correlation between variables in the student scale through correlation analysis. The results indicate that there is a significant correlation between all variables, and the correlation coefficients between all variables are greater than 0, indicating that there is a significant positive correlation between all variables.

Table 2 Correlation Analysis Results between Dimensions

Dimension	Digital resources of ethnic music	Artificial intelligence integrated teaching	learning motivation	The effectiveness of inheriting ethnic music	Student music literacy
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The effectiveness of inheriting ethnic music	0.409**	0.458**	0.479**	1	
Student music literacy	0.470**	0.429**	0.490**	0.493**	1

Data source: self-collation

3. Research how to utilize students' learning motivation factors to promote the effectiveness of ethnic music inheritance.

3.1 Digital Education Strategies and Learning Motivation

Research on the impact of digital resources for ethnic music on learning motivation in Guangxi universities is limited, and empirical exploration of the digitization of music from numerous ethnic groups is lacking. Therefore, this study empirically investigates H1a. The results (β=0.258, $p<0.001$) are significant, demonstrating that digital resources for ethnic music enhance students' interest in ethnic music. Compared to research on Liu Sanjie folk songs, short videos and online interactive courses, students are more willing to engage with and participate in these resources, thus stimulating learning motivation. This viewpoint is further confirmed in this study.

AI-powered music education offers a challenging and stimulating learning environment, encouraging students to collaborate with "virtual partners" However, this presents a unique dilemma and challenge in the digital practice of ethnic music education. To address this issue, this study validated H1b, and the results showed a significant (β=0.403, $p<0.01$) response, confirming that the application of AI in music education meets students'

learning needs and enhances their learning interest and motivation (Yuan, 2020). This viewpoint is further confirmed in this study.

3.2 The Effectiveness of Digital Education Strategies in the Inheritance of Ethnic Music

Guangxi universities lag behind in the development of digital teaching resources, making it difficult to meet actual teaching needs. As an important carrier of ethnic culture, the inheritance and development of ethnic music depends not only on the transmission of the music itself but also on the transmission of ethnic culture, history, customs, and other aspects. This study emphasizes that future efforts should strengthen the integration of digital resources into instructional design and cultural transmission functions. This study empirically examines H2a, showing (β=0.187, p<0.01) a significant effect, demonstrating that digital resources can significantly improve student engagement and music literacy. This further confirms the view that digital resources can enhance the effectiveness of ethnic music transmission.

This study empirically examines H2b, showing a significant β value (β = 0.310, p < 0.01). The results indicate that AI technology breaks down geographical and temporal limitations, enhancing the transmission of knowledge. The integration of AI into teaching significantly improves the efficiency of ethnic music collection, organization, and creation. This viewpoint is further confirmed in this study.

3.3 Learning Motivation and the Effectiveness of Ethnic Music Inheritance

This study empirically examined H3, and the results showed that (β = 0.248, p < 0.01) it was significant. The findings indicate that effectively stimulating learning interest and enhancing learning motivation are key to the inheritance of ethnic music. This viewpoint was further confirmed in this study.

4. To explore how students' learning motivation can address the challenges of integrating digital resources and artificial intelligence into the teaching of ethnic music in order to improve the effectiveness of ethnic music inheritance.

4.1 The mediating role of learning motivation.

Combining digital resources with interactive teaching and teacher guidance, among other external incentives, may more effectively enhance student engagement and retention. This study empirically examines H4a, showing a significant indirect effect of student learning motivation (β = 0.084, p < 0.001), indicating that learning motivation plays a positive mediating role in the relationship between digital resources for ethnic music and the effectiveness of ethnic music preservation. The results show that combining digital resources with interactive teaching and teacher guidance significantly enhances the effectiveness of ethnic music preservation by stimulating learning motivation. This viewpoint is further confirmed in this study.

Artificial intelligence (AI) technology is gradually being applied to music education. Learning motivation, as a key factor influencing the effectiveness of ethnic music transmission, warrants in-depth exploration. This study empirically examines H4b, finding a significant indirect effect of student learning motivation (β = 0.125, $p < 0.001$). Learning motivation plays a positive mediating role in the relationship between AI-integrated teaching and the effectiveness of ethnic music transmission. The results show that AI and other technologies enhance students' learning motivation in music education, thus improving the effectiveness of ethnic music transmission. This view is further confirmed in this study.

4.2 The Regulatory Role of Students' Musical Literacy

Systematic research on the relationship between students' musical literacy and learning motivation in art colleges in ethnic minority areas is limited, especially empirical research on the digitization of multi-ethnic music in Guangxi. This study conducts an empirical study using H5, and the moderating effect (β=.078, $p<0.001$) is significant. Learning motivation indirectly promotes the inheritance of ethnic music by influencing the improvement of students' musical literacy. Students with higher musical literacy are more likely to become inheritors, promoters, and enthusiasts of ethnic music, and are more likely to actively participate in ethnic music activities. This view is further confirmed in this study.

Conclusion

This Research The researcher can summarize the results of the research study according to the following The Purposes

1. Basic digital tools, such as music notation editing software (e.g., Sibelius) and school-built online learning platforms, have a high adoption rate in teaching, exceeding 70%. However, the classroom application rate of advanced technologies such as VR/AR and AI composition is less than 25%. Meanwhile, the teaching conversion rate of digital tools specifically for ethnic music, such as the Zhuang folk song database, is only 29%

2. Guangxi is an area with profound local folk music, and its folk music needs to be excavated, researched and the situation and problems of local folk music in music education in colleges and universities. the integration of teaching design and cultural inheritance function of digital resources should be strengthened

3. The digital education strategy can effectively stimulate the potential of students majoring in music, promote the integration of digital and folk music and inject new impetus into the high-quality development of music education in colleges and universities in Guangxi.

4. This paper puts forward the path of reconstructing the curriculum system, constructing the music digital education strategy, improving students' learning motivation, enhancing students' music literacy and so on, which provides feasible strategies for realizing the effect of national music inheritance.

Discussion

This Research The researcher can discuss the research results as follows

1. Digital innovation as a whole is currently in the basic application stage.

The study fully confirms that Guangxi Arts University has initially completed the basic construction of digital music education from scratch, but there is still considerable room for improvement in terms of deep integration. At the tool application level: Basic digital tools, such as music notation editing software (e.g., Sibelius) and school-built online learning platforms, have a high adoption rate in teaching, exceeding 70%. However, the classroom application rate of advanced technologies such as VR/AR and AI composition is less than 25%. Meanwhile, the teaching conversion rate of digital tools specifically for ethnic music, such as the Zhuang folk song database, is only 29% (Digital Innovation in Music Education Development at Guangxi Arts University.docx). This indicates that the school's application of digital tools is still concentrated at the basic level, and the promotion and application of advanced technologies and tools specific to ethnic music urgently need to be strengthened. At the curriculum integration level: For theoretical courses such as "History of Ethnic Music" and "Musical Aesthetics, digital modules account for 37%, with extensive use of digital scores, audio-visual materials, and other teaching aids, enriching the content and format of instruction to some extent. However, for performance courses, such as Zhuang Tianqin Performanc and Dong Grand Song Singing, the digital integration rate is only 25%. Teachers generally believe that the traditional apprenticeship teaching model is more suitable for the inheritance of ethnic music performance skills and hold a cautious attitude towards the application of digital technology. This reflects an imbalance in curriculum integration, with an emphasis on theory over practice.

2. Significant group differences, with obvious professional and generational gaps.

Teachers and students from different majors, years of teaching experience/grades exhibit significant differentiation in their digital innovation practices. Major Differences: The Music Education major, due to its explicit inclusion of digital teaching ability in its training objectives, scored highly in digital tool application, achieving 3.5 out of 5. Faculty in this major actively utilize digital technology in teaching, and students receive more practice in a digital learning environment. In contrast, the Ethnic Music Performance major, which emphasizes "original ecological inheritance," has a lower acceptance of technological intervention, scoring only

The study validated the interactive model of resources-capabilities-policie and clarified the key roles of teachers' digital literacy and policy support in digital innovation in music education.

Teachers' digital literacy is a core bottleneck: Teachers' curriculum integration ability has the strongest predictive power for the effectiveness of digital teaching, with a standardized regression coefficient β=0.62 ($p<0.001$). However, teachers scored lowest in digital transformation ability of ethnic music, at only 2.5 points (out of 5). This indicates that while teachers possess certain digital technology skills, they are significantly lacking in effectively integrating the characteristics of ethnic music with digital technology to achieve the digital transformation of teaching content, becoming a core factor restricting the in-depth development of digital innovation in music education.

Policy support plays a regulatory role: When schools establish a Special Fund for the Digitalization of Ethnic Music, the effectiveness of hardware investment is significantly improved, with an increase of up to 25%. However, current school policies mainly focus on general technologies and lack targeted support for the digitalization of ethnic music, failing to fully reflect the characteristics and needs of ethnic culture. As a result, the policy's role in promoting digital innovation in music education has not been fully realized.

Discoveries or New Knowledge

1. Use AI melody analysis to assist vocal training, and use digital technology to accurately analyze students' singing to help them better master the singing techniques of ethnic music.

2. Incorporate digital ethnic music works into graduation assessments, such as requiring students to submit virtual ensemble videos and digitally adapted ethnic music works, to guide students to value digital learning and improve

Suggestion

1. Suggestions for use

1.1 Integrate Moral Education into Leadership Programs: Colleges and universities should embed moral development as a core component of all student leadership programs. The findings confirm that moral character, motivation, and judgment are key predictors of leadership success. Institutions can design leadership courses that include ethics case studies, value-based decision-making workshops, and training on social responsibility to strengthen students' moral foundations alongside leadership skills.

1.2 Strengthen Experiential Learning Opportunities: Universities should expand hands-on leadership opportunities such as student government roles, service-learning projects, peer mentoring, and internships. The

research shows that experiential learning directly influences both moral and leadership development. These real-life experiences help students internalize ethical principles while developing confidence, communication, and team leadership abilities.

1.3 Promote Reflective and Identity-Building Activities: Programs should include structured reflection practices, such as journaling, dialogue circles, or coaching sessions, to encourage self-awareness and identity formation. As Student Identity Development (SID) plays a supporting role in the leadership process, helping students reflect on their values, motivations, and leadership identity will enhance their ethical decision-making and personal growth.

1.4 Design a Culturally Grounded Curriculum: Leadership education in Chinese universities should integrate Confucian values such as Ren (benevolence), Li (propriety), and Yi (righteousness), as these are deeply connected to students' understanding of moral and leadership responsibilities. Educators should contextualize leadership training within Chinese cultural norms to ensure that students develop ethical behaviors aligned with societal expectations.

1.5 Use the Leadership Development Model as a Framework: The confirmed leadership development model should be adopted as a practical guide for program planning, implementation and evaluation. It offers a clear framework showing how Learning Activities and Experiential Learning directly influence both Moral and Leadership Development. Institutions can use this model to structure interventions, assess progress, and align program goals with student development outcomes.

2. Suggestions for next research

2.1 Future research should expand the study to diverse educational institutions. Including students from various types of colleges and universities such as comprehensive universities, vocational colleges, and institutions in other regions of China can help determine whether the leadership development model is applicable across different educational and cultural settings. This would enhance the generalizability and adaptability of the model.

2.2 Future research should explore longitudinal developmental changes. By tracking students over the course of their university experience, researchers can better understand how moral and leadership development evolve over time. Longitudinal studies would reveal the timing, sequence, and long-term effects of interventions and leadership experiences.

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