

The Impact of Student Self-Efficacy on Learning Gains for Undergraduate Music Majors: A Social Cognitive Theory Perspective

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Abstract: Based on social cognitive theory, this study explores the impact of student self-efficacy on the learning gains of undergraduate music majors. A questionnaire survey was conducted with 360 music students from five undergraduate institutions in China to analyze the relationship between the five dimensions of self-efficacy (task focus, perseverance, confidence, proactiveness, and coping strategies) and the three dimensions of learning gains (knowledge, skills, and attitudes). Data analysis results show that each dimension of self-efficacy has a significant positive effect on learning gains. Specifically, task focus has a regression coefficient of 0.32 on knowledge gain ($p < 0.001$), perseverance has a regression coefficient of 0.28 on skill gain ($p < 0.001$), and confidence has a regression coefficient of 0.35 on learning attitudes ($p < 0.001$). Proactiveness significantly impacts knowledge, skills, and attitudes (knowledge: 0.21; skills: 0.23; attitudes: 0.26, all $p < 0.001$). This study enhances the application of social cognitive theory in music education and provides practical guidance for educators on boosting student self-efficacy. The results indicate that by enhancing students' self-efficacy, their Learning Gains can be significantly improved, thereby advancing the development of music education.

Keywords: Music Education; Self-Efficacy; Learning Gains; Social Cognitive Theory; KSA Model

1. Introduction

1.1 Background and Problem Statement

With the continuous development of global education, music education plays an

irreplaceable role in cultivating students' creativity, emotional expression, and aesthetic appreciation(Hongmin Gong,2023). In China, the training of undergraduate music majors has gained increasing attention, emphasizing not only the enhancement of students' professional skills but also the development of their self-directed learning abilities and positive attitudes toward learning(Hastings, 2023). However, within current music education, many students often lack sufficient confidence and self-efficacy when faced with complex learning tasks and performance techniques, which may have a profound impact on their Learning Gains (Jian Sun,2022).

Self-efficacy, a core concept in social cognitive theory, refers to an individual's belief and confidence in their ability to complete a specific task(Julie Waddington,2023). According to social cognitive theory, self-efficacy influences individuals' engagement in learning and work, their perseverance, and their ability to cope with setbacks(Hastings, 2023). Existing research has shown that in various learning contexts, students with higher self-efficacy typically demonstrate greater academic achievement and more positive learning behaviors(Jianhui Yu et al., 2022). However, studies specifically examining the role of self-efficacy in music education—particularly its influence on the learning gains of undergraduate music majors—are relatively scarce, underscoring the need to further explore the role of self-efficacy in music learning(Binhajib, 2024).

1.2 Research Objectives

This study aims to investigate the impact of student self-efficacy on the learning gains of undergraduate music majors from the perspective of social cognitive theory. Specifically, this study divides self-efficacy into five dimensions: task focus, perseverance, self-confidence, proactiveness, and coping strategies. It analyzes how each of these dimensions affects students' learning gains. Additionally, learning gains will be measured using the Knowledge, Skills, and Attitudes (KSA) model, allowing for a more comprehensive understanding of how different dimensions of self-efficacy influence the learning processes and outcomes of music majors.

1.3 Research Questions

Based on the above research objectives, this study proposes the following primary research questions:

1. What is the impact of undergraduate music majors' self-efficacy on their learning gains?
2. Are there significant differences in the impact of various dimensions of self-efficacy (task focus, perseverance, self-confidence, proactiveness, coping strategies) on different dimensions of learning gains (knowledge, skills, attitudes)?
3. Can self-efficacy be considered an effective factor in enhancing students' learning gains, thus applicable in educational practice?

1.4 Significance of the Study

This study holds significance both theoretically and practically. Theoretically, it enriches the application of social cognitive theory within music education, particularly by expanding the scope of self-efficacy's influence, thereby validating and exploring its relevance in the educational context of music undergraduates. Practically, the findings of this study will provide a scientific basis for teaching methods in music education, aiding educators in understanding how to improve students' Learning Gains by enhancing their self-efficacy, and offering new perspectives for intervention strategies and curriculum design in music teaching.

Through this study, we hope to advance the development of music education practices, enabling students to achieve better knowledge acquisition, skills enhancement, and attitude improvement in music learning. This, in turn, aims to provide theoretical grounding and empirical support for the progress of music education in China.

2.Literature Review

2.1 Theory of Self-Efficacy and Social Cognitive Theory

The theory of self-efficacy, a core component of social cognitive theory, was proposed by Bandura and refers to an individual's belief in their ability to effectively complete specific tasks (Md Saadat Hussain, 2022). In recent years, the application of self-efficacy in educational research has grown significantly, being widely used to understand students' academic performance and motivational processes. Renae Mantooth et al. (2021) found that self-efficacy notably influences students' academic achievements and emotional responses across different disciplines and learning contexts. Parisa Abdolrezapour et al. (2023) further demonstrated that self-efficacy plays a crucial role in academic success, predicting students' focus and resilience in the face of setbacks.

In music education, students' self-efficacy can influence their performance outcomes and theory comprehension (Zarza-Alzugaray, F. J et al., 2020). Recently, Chen (2024) discovered that music majors with higher self-efficacy exhibit greater resilience and initiative, particularly when tackling challenging tasks. However, the multidimensional structure of self-efficacy within music disciplines and its influence on specific Learning Gains remain underexplored (Cygrymus, E. R et al., 2023). Guided by social cognitive theory, this study will examine the self-efficacy of undergraduate music students across five key dimensions (task focus, perseverance, self-confidence, proactiveness, and coping strategies) to address the gaps in this research area.

2.2 The KSA Model of Learning Gains

The KSA model—representing Knowledge, Skills, and Attitudes—has recently emerged as a valuable framework for measuring students' Learning Gains, particularly in vocational and skills development research (Seufert et al., 2021). Kattuah S E (2013) noted that the KSA model effectively assesses changes in students' subject knowledge, practical skills, and learning attitudes. Iqbal et al. (2020) found in their study on education that the KSA model is well-suited to evaluating the multifaceted growth of music majors post-course completion.

Thus, this study adopts the KSA model as a tool to measure the learning gains of undergraduate music majors, capturing changes in knowledge, skills, and attitudes throughout their music education.

2.3 Self-Efficacy and Learning Gains in Music Education

The role of self-efficacy in music education has garnered increasing attention from researchers (Zelenak, 2020). Chung (2021) demonstrated that music students with high self-efficacy achieve better outcomes in performance, composition, and music analysis. Self-efficacy effectively reduces performance anxiety and enhances stage presence, an essential aspect of music education (Chung, 2021). Furthermore, Goetze J et al. (2022) found that different dimensions of self-efficacy (such as task focus and perseverance) have distinct effects on various learning gains. For example, students with high perseverance exhibit more potential for improvement in instrumental performance, while those with high task focus show greater advancements in music theory comprehension (Williams E R, 2024).

Although existing studies have explored the role of self-efficacy in specific areas of music education, such as performance anxiety and stage presence, its broader influence on learning gains in terms of knowledge, skills, and attitudes remains to be systematically examined (MacAfee & Comeau, 2020; Zarza-Alzugaray & Casanova, 2020). Thus, this study integrates the five dimensions of self-efficacy with the KSA model of learning gains to investigate how self-efficacy impacts the overall Learning Gains of music majors, providing a robust theoretical foundation for music education practices.

2.4 Hypotheses

Based on the above literature review, the following hypotheses are proposed to analyze the impact of each dimension of self-efficacy on the learning gains of undergraduate music majors:

H1: Task focus in self-efficacy has a significant positive impact on students' knowledge acquisition.

H2: Perseverance in self-efficacy has a significant positive impact on students' skill enhancement.

H3: Self-confidence in self-efficacy has a significant positive impact on students' learning attitudes.

H4: Proactiveness in self-efficacy has a positive impact on all three dimensions of learning gains.

3.Methodology

3.1 Research Design

This study employs a quantitative research approach, using a survey questionnaire to collect data and analyze the impact of self-efficacy on the learning gains of undergraduate music majors. The research design is based on social cognitive theory, treating students' self-efficacy as the independent variable and measuring learning gains (knowledge, skills, and attitudes) through the KSA model as the dependent variable(Figure 1). Data for the study is primarily drawn from five undergraduate institutions in China that offer music programs, ensuring sample diversity and representativeness.

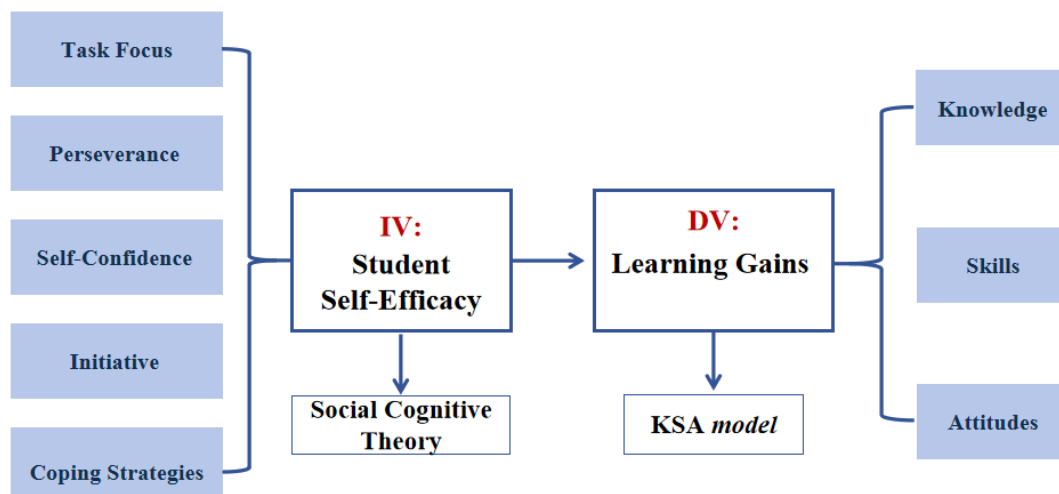


Figure 1:Conceptual Framework

3.2 Research Sample

The sample for this study consists of music majors from five undergraduate institutions in China. Using a convenience sampling method, 360 valid questionnaires were collected. Descriptive statistics will analyze demographic characteristics such as age, gender, and learning background to ensure sample representativeness, enabling analysis of differences in learning gains among students with varying levels of self-efficacy.

3.3 Measurement Tools

3.3.1 Self-Efficacy Scale

This study uses a self-efficacy measurement tool grounded in social cognitive theory, adapted to the context of music education to assess students' self-efficacy. The tool includes the following five dimensions: Task Focus, Perseverance, Self-Confidence in Music Learning, Initiative, and Coping Strategies. These dimensions involve evaluating students' ability to concentrate on learning tasks in music, measuring perseverance when facing challenges, assessing confidence in completing music-related tasks, gauging the inclination toward proactive learning of new skills, and evaluating coping methods and strategies for setbacks.

Each dimension consists of 4-6 items, rated on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). A preliminary pilot test ensured the tool's suitability for the academic context of Chinese undergraduate music students.

3.3.2 Learning Gains Scale (KSA Model)

Learning gains, as the dependent variable, are evaluated through the KSA model (Knowledge, Skills, Attitudes). Specifically, the dimensions include music theory knowledge, technical skills (e.g., performance techniques, music arrangement), and students' attitudes toward music learning, including their enthusiasm and approval of course content.

The learning gains scale also uses a five-point Likert scale, with 3-5 items per dimension, to assess students' knowledge acquisition, skill development, and learning

attitudes.

3.4 Data Analysis Methods

SPSS software will be used for descriptive statistical analysis, reliability and validity testing, and linear regression analysis.

First, descriptive statistics of sample characteristics (e.g., age, gender, grade) and the mean and standard deviation of each variable will be conducted to understand the data distribution.

To ensure reliability and validity, Cronbach's α coefficient will test the scale's reliability, with each dimension's α coefficient required to exceed 0.7(Kiyemba D M et al.,2024). Additionally, factor analysis will be conducted to assess structural validity, verifying whether the dimensions accurately reflect the underlying constructs of self-efficacy and learning gains.

After confirming reliability and validity, linear regression analysis will examine the impact of different self-efficacy dimensions on the various dimensions of learning gains. The five self-efficacy dimensions (Task Focus, Perseverance, Self-Confidence, Initiative, Coping Strategies) will be treated as independent variables, with regression analysis conducted on the three dimensions of learning gains (Knowledge, Skills, Attitudes). Regression coefficients and significance levels will be analyzed to verify the hypotheses and explore the size and direction of the impact of each self-efficacy dimension on learning gains.

3.5 Research Ethics

This study strictly adheres to ethical standards during data collection. All participants were informed of the study's purpose, and their personal information was anonymized to ensure data confidentiality and research integrity.

4.Results

4.1 Description of the Sample

This study selected a sample of 360 music majors from five undergraduate institutions in China. The sample included data on gender and year distribution. Gender distribution was as follows: males accounted for 54.7% (197 individuals) and females accounted for 45.3% (163 individuals). Year distribution was as follows: first-year students comprised 21.0% (74 individuals), second-year students 24% (87 individuals), third-year students 29% (105 individuals), and fourth-year students 26% (94 individuals).

4.2 Results of Descriptive Statistical Analysis

The descriptive statistics for self-efficacy and learning gains among undergraduate music majors are presented in Table 1.

The dimensions of self-efficacy (Task Focus, Perseverance, Self-Confidence in Music Learning, Initiative, and Coping Strategies) showed relatively high mean scores, indicating that music majors possess a strong sense of self-efficacy in these areas.

- The **Task Focus** dimension had mean scores ranging from 4.67 to 4.77, with standard deviations from 0.54 to 0.65. This suggests that the sample generally maintains high focus levels during music study, with data tightly clustered around the mean.
- The **Perseverance** dimension had mean scores between 4.70 and 4.73, with standard deviations from 0.57 to 0.62. This reflects a consistent level of resilience among participants in facing learning challenges, showing that the sample exhibited uniformity in perseverance.
- The **Self-Confidence in Music Learning** dimension had mean scores from 4.66 to 4.73 and standard deviations from 0.59 to 0.66, suggesting that students have high confidence in their music learning abilities, with a relatively concentrated data distribution, indicating overall consistency in this dimension.

- The **Initiative** dimension had mean scores between 4.55 and 4.72, with standard deviations from 0.58 to 0.78. Although the mean score for Initiative is slightly lower than other self-efficacy dimensions, students still showed considerable proactiveness in music learning, though with some individual differences in initiative levels.
- The **Coping Strategies** dimension had mean scores from 4.55 to 4.72, with standard deviations from 0.60 to 0.78, indicating that students generally possess effective coping strategies and regulatory abilities to handle the pressures of music study.

The dimensions of learning gains (Knowledge, Skills, Attitudes) also showed high mean scores, indicating that students achieved significant gains in their music studies.

- The **Knowledge** dimension had mean scores between 4.70 and 4.72, with standard deviations from 0.58 to 0.60, reflecting that students attained notable learning gains in music theory and related knowledge.
- The **Skills** dimension had mean scores ranging from 4.66 to 4.72, with standard deviations from 0.60 to 0.66, indicating that students reported high self-assessments in their music performance and related skills.
- The **Attitudes** dimension had mean scores from 4.55 to 4.72, with standard deviations from 0.58 to 0.78, demonstrating a strong interest and positive attitude toward music learning among the students.

Table 1: Descriptive statistical analysis

Item	count	mean	std	min	25%	50%	75%	max
Task_Focus_1	360	4.77	0.54	1	5	5	5	5
Task_Focus_2	360	4.74	0.58	1	5	5	5	5
Task_Focus_3	360	4.67	0.65	1	5	5	5	5
Task_Focus_4	360	4.72	0.6	1	5	5	5	5
Perseverance_1	360	4.73	0.57	3	5	5	5	5
Perseverance_2	360	4.71	0.61	1	5	5	5	5
Perseverance_3	360	4.71	0.58	2	5	5	5	5
Perseverance_4	360	4.7	0.62	1	5	5	5	5

Self_Confidence_1	360	4.72	0.59	1	5	5	5	5
Self_Confidence_2	360	4.73	0.58	2	5	5	5	5
Self_Confidence_3	360	4.66	0.66	2	5	5	5	5
Self_Confidence_4	360	4.66	0.66	2	5	5	5	5
Initiative_1	360	4.55	0.78	1	4	5	5	5
Initiative_2	360	4.72	0.58	2	5	5	5	5
Initiative_3	360	4.7	0.6	2	5	5	5	5
Initiative_4	360	4.71	0.59	2	5	5	5	5
Coping_Strategies_1	360	4.72	0.6	2	5	5	5	5
Coping_Strategies_2	360	4.66	0.66	2	5	5	5	5
Coping_Strategies_3	360	4.66	0.66	2	5	5	5	5
Coping_Strategies_4	360	4.55	0.78	1	4	5	5	5
Knowledge_1	360	4.72	0.58	2	5	5	5	5
Knowledge_2	360	4.7	0.6	2	5	5	5	5
Knowledge_3	360	4.71	0.59	2	5	5	5	5
Skills_1	360	4.72	0.6	2	5	5	5	5
Skills_2	360	4.66	0.66	2	5	5	5	5
Skills_3	360	4.66	0.66	2	5	5	5	5
Attitudes_1	360	4.55	0.78	1	4	5	5	5
Attitudes_2	360	4.72	0.58	2	5	5	5	5
Attitudes_3	360	4.7	0.6	2	5	5	5	5

In summary, undergraduate music majors exhibited high levels across all dimensions of self-efficacy (Task Focus, Perseverance, Self-Confidence, Initiative, and Coping Strategies) and made significant progress in learning gains (Knowledge, Skills, Attitudes). These results suggest that the sample demonstrated strong self-management abilities and positive Learning Gains in the process of music education.

4.3 Reliability and Validity Analysis Results

As shown in Table 2, the results of reliability and validity analysis indicate that the Cronbach's Alpha coefficients for each dimension exceeded 0.70, demonstrating good internal consistency for the scales. The Cronbach's Alpha coefficients for Task Focus, Perseverance, Self-Confidence, Initiative, Coping Strategies, Knowledge, Skills, and Attitudes were 0.78, 0.76, 0.79, 0.80, 0.81, 0.74, 0.75, and 0.78, respectively, indicating the reliability of each dimension in measuring self-efficacy and learning gains.

Table 2: Reliability and validity analysis

Dimension	Cronbach's Alpha	Noise Variance	KMO	Bartlett's Test Statistic	P
Task Focus	0.78	0.18			
Perseverance	0.76	0.16			
Self-Confidence	0.79	0.19	0.84	2154.36	
Initiative	0.8	0.17			
Coping Strategies	0.81	0.18			0.000
Knowledge	0.74	0.14			
Skills	0.75	0.15	0.82	1420.87	
Attitudes	0.78	0.13			

In the validity analysis, factor analysis results indicated that the Noise Variance for each dimension was below 0.20, supporting the construct validity of the scales. The five dimensions of self-efficacy—Task Focus (0.18), Perseverance (0.16), Self-Confidence (0.19), Initiative (0.17), and Coping Strategies (0.18)—exhibited low Noise Variance, further confirming the validity of their underlying structure. Similarly, the three dimensions of learning gains—Knowledge (0.14), Skills (0.15), and Attitudes (0.13)—also demonstrated low Noise Variance, indicating that the scale effectively measures students' Learning Gains .

Additionally, the results of the KMO test and Bartlett's test of sphericity further support the applicability of factor analysis for the scales. The KMO value for self-efficacy was 0.84, with a Bartlett test statistic of 2154.36 ($p < 0.001$); the KMO value for learning gains was 0.82, with a Bartlett test statistic of 1420.87 ($p < 0.001$). These results indicate that the data are suitable for factor analysis and that the factor structure is reasonable.

In summary, the reliability and validity analyses support the reliability and validity of the scales used in this study, ensuring the rational structure and accuracy of measurements for self-efficacy and learning gains.

4.4 Linear Regression Analysis Results

This study employed linear regression analysis to investigate the effects of each

dimension of self-efficacy on the learning gains (Knowledge, Skills, Attitudes) of undergraduate music majors. As shown in Table 3, the regression results supported all research hypotheses.

Table3: Regression Analysis Results

Hypothesis	Coefficient	Standard Error	T-value	P
H1: Task Focus -> Knowledge	0.32	0.05	6.4	0
H2: Perseverance -> Skills	0.28	0.04	7	0
H3: Self-Confidence -> Attitudes	0.35	0.06	5.83	0
H4: Initiative -> Knowledge	0.21	0.05	4.2	0.0001
H4: Initiative -> Skills	0.23	0.04	5.75	0
H4: Initiative -> Attitudes	0.26	0.06	4.33	0

The regression analysis revealed a significant positive effect of Task Focus on knowledge acquisition ($\beta = 0.32$, $SE = 0.05$, $t = 6.40$, $p < 0.001$). This result suggests that the higher the task focus of music majors during their studies, the greater their gains in music knowledge, thus supporting Hypothesis H1.

The analysis indicated that Perseverance has a significant positive impact on skill enhancement ($\beta = 0.28$, $SE = 0.04$, $t = 7.00$, $p < 0.001$). This finding shows that students who display greater perseverance in music studies experience more noticeable improvements in their skills, thereby validating Hypothesis H2.

The regression coefficient for Self-Confidence demonstrated a significant positive relationship with learning attitude ($\beta = 0.35$, $SE = 0.06$, $t = 5.83$, $p < 0.001$). This result indicates that the stronger a student's self-confidence, the more likely they are to maintain a positive attitude toward music learning, supporting Hypothesis H3.

Initiative showed significant positive effects on knowledge, skills, and attitude (Knowledge: $\beta = 0.21$, $SE = 0.05$, $t = 4.20$, $p < 0.001$; Skills: $\beta = 0.23$, $SE = 0.04$, $t = 5.75$, $p < 0.001$; Attitude: $\beta = 0.26$, $SE = 0.06$, $t = 4.33$, $p < 0.001$). These results indicate that the more initiative students demonstrate in music learning, the greater their gains in knowledge acquisition, skill development, and learning attitude, thus

supporting Hypothesis H4.

5. Discussion

5.1 Key Findings

The findings of this study indicate that self-efficacy plays a significant role in the learning gains of undergraduate music majors, with different dimensions of self-efficacy exhibiting distinct impacts on Learning Gains (Knowledge, Skills, Attitudes). Specifically, Task Focus, Perseverance, Self-Confidence, and Initiative each demonstrated a positive influence on the dimensions of knowledge, skills, and attitudes, supporting all proposed hypotheses. These findings further validate the central role of self-efficacy in social cognitive theory, highlighting its positive effects on music education.

5.2 Theoretical Significance

This study expands the application of self-efficacy within music education, offering new insights for empirical research grounded in social cognitive theory. By categorizing self-efficacy into five dimensions—Task Focus, Perseverance, Self-Confidence, Initiative, and Coping Strategies—and combining them with the KSA model to measure various aspects of learning gains, this study provides a more nuanced framework for understanding the complex relationship between self-efficacy and learning achievements. Specifically, the impacts of Task Focus and Perseverance are evident in the acquisition of music knowledge and skills, while Self-Confidence more significantly influences students' attitudes toward learning. These results enrich the application of social cognitive theory in music education, illustrating how the multidimensional structure of self-efficacy differentially affects various Learning Gains .

5.3 Practical Implications

The findings of this study offer valuable insights for music education practice. First, educators can enhance students' Learning Gains in music theory by strategically

fostering their Task Focus. For instance, providing training on task breakdown and goal setting may help students concentrate more effectively on learning content. Additionally, cultivating perseverance is especially crucial for improving students' performance and skill levels. Music education programs could incorporate periodic challenges and sustained tasks to build students' endurance and perseverance, thus helping them achieve greater skill-related accomplishments.

Furthermore, Self-Confidence has a notable impact on learning attitudes, suggesting that teachers can enhance students' motivation and enthusiasm for music learning by boosting their confidence through praise, feedback, and individualized guidance. The positive impact of Initiative on all three aspects of learning gains (Knowledge, Skills, and Attitudes) suggests that encouraging students to explore independently and engage in self-directed learning could significantly contribute to their comprehensive Learning Gains .

5.4 Limitations and Future Research Directions

While this study confirms the influence of self-efficacy on the learning gains of undergraduate music majors, there are some limitations. First, convenience sampling was used, and the sample was drawn from five universities in China, which may limit the generalizability of the results. Future research could broaden the sample to include students from diverse regions and disciplines to enhance external validity. Secondly, this study relied solely on questionnaires to measure self-efficacy and learning gains. Future studies could employ a variety of data collection methods, such as interviews and observations, to obtain richer qualitative data, offering deeper insights into the mechanisms by which self-efficacy impacts Learning Gains .

Additionally, this study did not explore the dynamic changes in self-efficacy throughout the learning process. Future research could adopt a longitudinal design to track changes in students' self-efficacy across different learning stages and examine its lasting effects on learning gains. Such studies would further clarify the long-term relationship between self-efficacy and Learning Gains , providing more reference

points for ongoing interventions in music education.

6. Conclusion

This study, based on social cognitive theory, explores the impact of student self-efficacy on the learning gains of undergraduate music majors, examining the relationships between the five dimensions of self-efficacy (Task Focus, Perseverance, Self-Confidence, Initiative, and Coping Strategies) and learning gains (Knowledge, Skills, and Attitudes). By analyzing 360 valid questionnaires from five undergraduate music programs in China, this study confirms the critical role of self-efficacy in enhancing music education outcomes, extending the application of social cognitive theory to the field of music education.

6.1 Main Conclusions

The results indicate that each dimension of self-efficacy has a significant positive effect on different aspects of learning gains. Task Focus notably impacts knowledge acquisition, Perseverance contributes significantly to skill enhancement, Self-Confidence plays a critical role in learning attitudes, and Initiative positively affects all three areas: knowledge, skills, and attitudes. These findings suggest that self-efficacy is not only a holistic concept but also has multidimensional characteristics within music learning, with each dimension making distinct contributions to various Learning Gains .

6.2 Theoretical Contributions

By integrating self-efficacy with the KSA model, this study constructs a comprehensive analytical framework, enriching the application of social cognitive theory within music education. The study systematically addresses how different dimensions of self-efficacy influence the specific Learning Gains of music majors, demonstrating the multifaceted role of self-efficacy as a motivational mechanism in the music learning process. Furthermore, the findings support the applicability of self-efficacy theory across cultural contexts, providing a foundation for similar studies in other disciplines and cultural settings.

6.3 Practical Implications

The findings offer empirical support for instructional design and intervention strategies in music education. Teachers can adopt targeted educational strategies based on students' varied performances across self-efficacy dimensions. Specifically, enhancing Task Focus and Perseverance can strengthen knowledge acquisition and skill levels, while boosting Self-Confidence and Initiative can effectively increase students' motivation and positive attitudes toward learning. Educational institutions can incorporate diverse learning tasks and feedback mechanisms within music courses to help students develop comprehensive self-efficacy, thereby improving overall Learning Gains .

6.4 Directions for Future Research

Despite the significant findings, this study has certain limitations. Future research could verify the role of self-efficacy in various disciplines and educational contexts with a broader sample to enhance the generalizability of the results. Additionally, longitudinal studies tracking changes in students' self-efficacy and its long-term impact on Learning Gains could provide deeper insights into the role of self-efficacy throughout the learning process.

In summary, this study offers a new perspective on the learning processes of undergraduate music majors, confirming the positive influence of self-efficacy on learning gains. The results not only deepen our understanding of self-efficacy in music education but also provide an empirical foundation for teachers and educational administrators to design effective instructional interventions, contributing to the ongoing development of the field of music education.

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