

# Research on the Influence Mechanism of Music Education on Preservice Teachers' Learning Ability

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**Abstract:** This paper explores how music education affects preservice teachers' learning ability. A review and analysis of relevant research literature found that music education positively affects preservice teachers' learning ability. Specifically, music education can improve preservice teachers' cognitive, emotional, and creative thinking abilities. The enhancement of these competencies mainly stems from the emotional experience, cognitive training, and creative thinking that music education has. In addition, there are differences in the impact of music education on the learning abilities of different types and levels of preservice teachers, which are related to factors such as individual differences, educational background, and music education approaches. Therefore, differentiated teaching regarding individual differences and educational backgrounds is needed in music education. Finally, this paper suggests applying music education in preservice teacher training, including increasing the time and content of music education and encouraging preservice teachers to participate in music composition. These suggestions can provide reference and guidance for applying music education in preservice education.

**Keywords:** Differentiation, Influence mechanisms, Learning ability, Music education, Preservice teachers.

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## 1. Introduction

### 1.1. Research Background

Music education, as an essential part of the educational field, is necessary to develop students' musical literacy and aesthetic skills and improve their overall quality. In recent years, more and more research has shown that music education positively impacts students' cognitive, emotional, and creative abilities, which profoundly affects their learning abilities. Therefore, studying the mechanism of music education's impact on preservice teachers' learning ability will not only help to improve preservice teachers' learning ability but also help to promote the development and upgrading of the education field.

Preservice teachers are unpractised teachers who are about to graduate from teacher training colleges and enter education. They often encounter various difficulties and challenges during their educational practice, such as curriculum design, teaching strategies, classroom management, and other issues. Therefore, improving the learning capacity of preservice teachers can help them better cope with the various challenges in educational practice, as well as improve their educational teaching and the overall competence of their students.

The primary purpose of this paper is that current research on the impact of music education on preservice teachers' learning ability is scattered, and the specific mechanisms and pathways of influence of music education on preservice teachers' learning ability still need to be completely clear. Therefore, this study aims to reveal the mechanism of music education's influence on preservice teachers' learning ability from the perspective of music education and learning ability, to provide scientific theoretical support and practical guidance for preservice teachers' training and education, and also to make some contribution to promoting the development of educational research and improving China's education standards.

### 1.2. Literature Review

In recent years, domestic and international research on music education's impact on students' learning ability has shown vigorous development. However, research on the mechanism of music education's influence on preservice teachers' learning ability is still in its infancy. During our literature search, we found that some scholars have focused on the relationship between music education and preservice teachers' learning effectiveness, while others have focused on the relationship between music education and preservice teachers' classroom management and teaching strategies. However, the specific mechanisms and pathways of influence of music education on preservice teachers' learning ability still need to be fully clear.

Foreign scholars' research on music education on students' learning ability is relatively diverse. Kirschner and Tomasello's research shows that music education can improve preservice teachers' cognitive, affective, and social cognition, thus improving their learning and teaching abilities (Kirschner & Tomasello, 2010). Rabinowitch argues that music education can enhance preservice teachers' perceptual-motor coordination, emotional expression, and social interaction, thus improving their learning and teaching abilities (Rabinowitch, 2013). Jorgensen argues that music education can enhance preservice teachers' personality development, emotional expression, and learning abilities, thus improving their educational and teaching skills (Jorgensen, 2009). Hallam's research shows that music education can improve preservice teachers' executive functioning, spatial cognition, and working memory abilities, thus improving their learning and teaching abilities (Hallam, 2014).

Research by domestic Chinese scholar Chen Siyu suggests that music education can enhance preservice teachers' creative thinking, affective cognition, and spatial imagination, thus improving their learning and teaching abilities (Chen, 2018). According to Liu Hao, music education can promote

preservice teachers' cognitive development and personality growth, thus improving their learning and teaching abilities (Liu, 2017). Fan Yating's research shows that music education can improve preservice teachers' language expression, imagination, and creativity, thus improving their learning ability and teaching (Fan, 2020). According to Wang Fei, music education can improve preservice teachers' aesthetic, interpersonal, and emotion management skills, thus improving their learning and teaching skills (Wang, 2016). Liu Xing's research shows that music education can improve preservice teachers' music literacy, music expression ability, and music teaching ability, thus improving their learning ability and teaching level (Liu, 2018).

To sum up, when domestic scholars study the influence mechanism of music education on preservice teachers' learning ability, they need to think deeply and explore the theoretical basis, research methods, research scope, and applicability in order to improve the quality and practicality of the study. It is also necessary to draw on foreign research experience and achievements, strengthen international cooperation, and promote the development and progress of related research fields.

## **2. The Importance of Music Education**

### **2.1. Definition and Meaning of Music Education**

Music education is a form of education that helps students holistically develop their intellectual, emotional, creative, and aesthetic abilities through teaching activities in music knowledge, skills, and culture. It includes not only the training of musical skills but also the study of music culture, music history, and music theory, as well as the development of music appreciation and composition. Music education takes place mainly in schools, communities, conservatories, and other venues (Hallam, S., 2010).

Music education develops students' musical skills and promotes the development of all aspects of students' intellectual, emotional, creative, and aesthetic abilities, resulting in a more holistic and balanced development. Music as an art form has unique aesthetic value and aesthetic characteristics. Through the practical activities of music education, students can further understand and appreciate the aesthetic value of music and thus improve their aesthetic ability. Cross-cultural encounters are occurring more frequently as a result of globalisation, and music, a crucial aspect of culture, can assist enhance cross-cultural interaction by promoting communication and understanding. Working together to achieve objectives in music education practical exercises can help students improve their social skills, a spirit of cooperation, and a sense of teamwork while creating a strong foundation for their future social lives (Webster & Weir, 2005).

In conclusion, the study of music at school is essential for students' overall development, ability to communicate across cultures, and social skills.

### **2.2. The Benefits of Music Education for the Students**

In addition to emphasising the development of musical skill, music education takes a holistic approach to students' development, concentrating on their spiritual health and life lessons. The main benefits of music teaching for students include the following.

Learning music improves students' cognitive capacities in the first place. Music students must learn about music theory, understand rhythms, understand beats, etc. All of these tasks require students to concentrate, which improves their cognitive abilities. Children may improve in areas like math, logic, and spatial perception as a result of studying music, according to studies (Hallam, S., 2010).

The second advantage of music instruction is that it encourages pupils' creativity. Music education strongly emphasises encouraging students to use their imagination and creativity in order to enhance their ability to compose music. By employing music to better express their thoughts and feelings, students' creativity and expression can be improved (Rickard, Bambrick, & Gill, 2012).

Additionally, music lessons might help kids feel more confident. The sense of success that students experience from studying music may help to increase their self-esteem. When students take part in musical events and feel that their skills and talents are valued, their self-confidence is increased.

And last, a music education can help kids become more socially adept. The requirement for students in music education to participate in an orchestra or chorus can aid in the social and cooperative development of the students.

Through musical activities, students gain social skills that help them feel more at ease in social situations, including how to engage, communicate, and collaborate with others (Swanwick, 2010).

### **2.3. The Significance of Music Education for Preservice Teachers**

It is impossible to exaggerate how crucial music education is for aspiring teachers. According to Kang, H. J., and Good (A. J., 2019), music education can enhance preservice teachers' professional development chances and teaching skills while also raising the standard of instructors as a whole.

The general calibre of preservice teachers can be improved by music teaching, to start. The study of music is an example of a comprehensive educational strategy that prioritises students' social, cognitive, and creative growth. In order to improve their overall teaching standards and quality, preservice teachers can benefit from the theories and instructional techniques employed in music education (Rubin, 2018).

Second, learning music can help preservice teachers become better teachers. By studying music education, preservice teachers can learn the essential methods and skills of teaching music while also better understanding the nature and characteristics of music teaching (Scholes, 2016). This helps aspiring teachers in their planning so they can employ music education for their pupils' overall growth more efficiently.

Finally, music education can help preservice teachers advance their careers. As music education continues to develop, more and more schools focus on music education, and there is a growing demand for teachers with a background in music education (Wang & Zhu, 2018). Therefore, studying music education can provide preservice teachers with more career opportunities and prospects.

In summary, music education is important for preservice teachers, as it can help them to improve their overall quality, strengthen their teaching abilities and expand their career prospects.

### **3. Training and Development of Preservice Teachers**

#### **3.1. Definition and Role of Preservice Teachers**

Preservice teachers are individuals in education or training who have not formally started teaching (Borko, H.,2016). Preservice teachers will be an essential part of the education system in the future. Their role will involve many other aspects of their duties and responsibilities than just imparting knowledge.

The role of preservice teachers is more diverse, and they need to learn and acquire educational theories and knowledge to better apply them in their future teaching practice. Preservice teachers must acquire pedagogical skills and methods to effectively manage classrooms and impart knowledge (Deng, 2019). They need to understand the content and teaching standards of the subject or area they teach to ensure that students receive a high-quality education as they progress through their studies. Preservice teachers must also work closely with students, parents, and other educators to provide the best educational services and support (Chen & Lo ,2017). Preservice teachers are an essential part of the future education system. Their role is to impart knowledge and include many other aspects of their duties and responsibilities.

#### **3.2. Training Models and Methods for Preservice Teachers**

Preservice teacher training models and methods are essential to modern education systems. As an essential part of the education system, training models and methods for preservice teachers need to be considered from several perspectives to improve the quality of education and professional development (Korthagen, 2017). In the following, the training models and methods for preservice teachers are discussed from five perspectives: educational theory, practical teaching, online education, social learning, and teacher assessment.

From the perspective of educational theories, preservice teachers' training should be based on the latest educational theories to improve their educational standards and professionalism. For example, preservice teachers should learn the latest knowledge in educational technology and educational psychology better to meet the needs of today's educational environment.

From the practical teaching perspective, preservice teachers must improve their education and professional development through practice. For example, preservice teachers should participate in internships or undertake practical teaching both in and out of school to acquire teaching skills and develop teaching experience to equip them for their future teaching jobs better.

From an online education perspective, online educational resources and distance training in the modern world are gradually becoming a mainstream mode of preservice teacher training. The advantages of this model are that it provides efficient and convenient education services through online resources and technology and that teaching resources are more extensive and diverse.

From a social learning perspective, preservice teachers should also strengthen their communication and collaboration with other educators in order to build a teaching community. For example, preservice teachers can attend training courses

and educational conferences to share teaching experiences and collaborative approaches with other educators.

From the perspective of teacher evaluation, preservice teachers should be assessed on the effectiveness of their teaching and teacher quality. For example, schools can assess preservice teachers' teaching effectiveness and teacher quality through observations, questionnaires, examinations, and student feedback in order to provide them with relevant training and support.

#### **3.3. The Development Needs and Challenges of Preservice Teachers**

Preservice teachers confront a variety of requirements and difficulties as they grow into their roles as crucial members of the educational system. This paper will look at preservice teachers' development requirements and difficulties from a variety of angles.

To begin, preservice teachers must stay current on educational technologies and theories. Educational technology is continually developing, and preservice teachers must keep up to date in order to meet the demands of modern education. Simultaneously, preservice teachers must stay current on educational ideas in order to improve their teaching standards and educational literacy. Bull et al. (Bull, Thompson, Searson, Garofalo, Park, Young & Lee, 2016) investigated how to create technology-integrated teacher professional development programmes to support the growth of teachers' technological, pedagogical, and subject expertise.

Second, preservice teachers must have a plethora of practical experience in order to increase their teaching quality and professionalism. Practical teaching can assist teachers gain teaching skills and experience that will better prepare them for future teaching careers. Chai et al., for example, investigated ways to assist the development of preservice teachers' technology, education, and content knowledge (TPACK) and established its effectiveness through curriculum design and implementation (Chai, Koh & Tsai, 2018).

Third, future teachers must comprehend the developments and uses of online learning. Online educational materials and distant learning are gradually becoming commonplace preservice teacher preparation methods in contemporary culture, promoting the accessibility and availability of educational resources and technologies. To deliver high-quality online educational services, teachers must be provided with the necessary tools and resources. According to Korthagen (Korthagen, 2017), educators must adopt the 'Education Learning 3.0' trend and create their own unique educational learning styles and mindsets.

Building teaching communities will also help preservice teachers communicate and collaborate with other educators. Teachers that participate in social learning have better access to a variety of learning opportunities and resources as well as improved teaching practises. For instance, Loughran and Berry (Loughran & Berry, 2018) looked at ways to create teacher teams with shared objectives and assessed the efficiency of teacher teams.

In conclusion, preservice teachers must meet a variety of developmental demands and obstacles, such as mastering the most recent educational theories and technologies, gaining real-world experience, comprehending the trends and uses of online education, creating teaching communities, and improving communication and collaboration with other educators.

## **4. Factors Affecting the Learning Ability**

### **4.1. Definition and Measurement of Learning Ability**

The term "learning ability" describes a person's capacity to pick up information, analyse it, comprehend it, and apply it in a particular learning context. Continuous learning can be used to increase and enhance learning capacity, which is a dynamic process. The evaluation of learning capacity can assist people in understanding their own learning so they can increase their learning ability specifically. There are various methods for measuring learning capacity.

To begin with, it can be helpful to understand the person's motivation for learning and their learning objectives in order to gauge how strong their capacity for learning is. Second, by examining the techniques and approaches people employ during the learning process, learning methods and strategies can be utilised to assess an individual's level of learning capacity. To grasp the knowledge and skills people have learned and to gauge their level of learning capacity, one can also take a look at learning outcomes.

Chinese academics have also recently carried out significant studies on learning capacity. For instance, through a survey research of university students, Lin Qinmei and Deng suggested a measurement tool based on learning methods and strategies that can efficiently assess students' learning aptitude (Lin & Deng, 2019). Additionally, Sun Meng and Liu Xinran discovered that raising children's self-efficacy can help them learn better through an experimental study with primary school kids (Sun & Liu, 2018).

In conclusion, the process of learning is dynamic. To determine the amount of a person's particular learning capacity, it can be measured based on a variety of factors, including motivation and goals, learning methods and tactics, and learning results. Chinese academics have also carried out pertinent research on learning capacity, which gives measurement of learning ability a specific theoretical foundation and real-world application.

### **4.2. Factors Influencing Learning Ability**

Learning ability is influenced by a variety of social, cultural, educational, and personality factors. The learning environment, learning motivation, learning tactics, and the individual are the four primary elements.

One of the most significant factors affecting learning capacity is the learning environment. The educational background of the teacher, educational resources, and learning atmosphere all make up the learning environment. A positive learning environment, top-notch teachers, and top-notch learning materials all help students learn more effectively.

An important component affecting learning ability is motivation for learning. Both intrinsic and extrinsic motivation can be used to motivate learning. Extrinsic motivation, on the other hand, refers to external incentives, punishments, etc., whereas intrinsic motivation refers to the person's passion and interest in learning. An individual's capacity to learn is influenced by their intrinsic motivation.

A key component of learning capacity is learning techniques. Planning, defining learning objectives, gathering learning resources, engaging in meaningful learning, and self-monitoring are all examples of learning strategies. Effective

learning techniques can increase a person's capacity for learning.

Cognitive, emotional, and personality characteristics are examples of individual factors. The term "cognitive factors" refers to an individual's cognitive abilities, such as attention, memory, and thinking skills, during the learning process. During the learning process, an individual's emotions, motivation, and attitudes are referred to as emotional variables. Personality traits, such as extroversion, introversion, and neuroticism, are referred to as personality factors. Each of these separate elements has an impact on how learning ability develops and gets better.

## **5. The Impact of Music Education on Preservice Teachers' Learning Abilities**

### **5.1. Theoretical Basis of Music Education on Preservice Teachers' Learning Ability**

The cultivation of students' musical literacy and talent is a crucial component of music education, which can also improve students' general well-being and support their balanced physical and mental growth. The development of preservice teachers' learning skills also depends on music instruction. Theoretically, music education for preservice teachers' learning abilities is based on pedagogy and cognitive psychology.

Attention, memory, thinking, and learning are among the cognitive processes that are studied in cognitive psychology. Through music learning, enjoyment, and performance, music education can enhance preservice teachers' cognitive capacities. Pre-service teachers can learn new information and skills while also honing their focus, memory, and reasoning abilities by, for instance, singing and playing musical instruments. Preservice teachers might learn to appreciate musical works to strengthen their aesthetic and emotional experience skills and to enhance their perceptual abilities. Through performance and direction, music performances can help preservice teachers express themselves more clearly and communicate more effectively while also fostering personal growth.

Education's theoretical and applied components, such as instructional goals, strategies, and evaluation, are studied by pedagogy. By enhancing preservice teachers' musical literacy and skills, music education can raise their academic and teaching standards as well as their personal growth. For instance, music education can enhance preservice teachers' musical literacy, enhancing their knowledge and understanding of music and ultimately enhancing their ability to give music lessons. Through teaching reflection and evaluation, music education can also develop preservice teachers' educational and instructive abilities.

Chinese scholars have found through questionnaires and interviews that music education can promote the development of creativity in preservice teachers. In conclusion, music education is essential for improving preservice teachers' learning abilities. Cognitive psychology and pedagogy provide theoretical foundations that offer some theoretical support and practical guidance for improving preservice teachers' learning abilities through music education.

## 5.2. The Practical Significance of Music Education for Preservice Teachers' Learning Ability

Music education has not only theoretical significance but also practical significance in improving the learning ability of preservice teachers. Through music education, preservice teachers can learn musical knowledge and skills and some teaching methods and techniques. For example, music education can help preservice teachers understand how to design music lessons, evaluate students' musical performance, etc., and improve their educational and teaching skills.

Music education can improve preservice teachers' artistic skills and quality through music composition, performance, and appreciation. Learning and practicing in these areas can promote preservice teachers' personal growth and development and improve their overall quality and social skills. Music education positively impacts preservice teachers' creativity and creative awareness. Through the study and practice of music, preservice teachers can learn some methods and techniques of creative thinking, improve their creativity and innovative consciousness, and lay a solid foundation for their future educational and teaching work. Preservice teachers' learning and practice in music education can contribute to the overall development of students. For example, through music education, preservice teachers can improve students' musical literacy and musical ability, and promote their physical and mental health development and overall quality.

Through the study and practice of music education, preservice teachers can improve their own educational and teaching skills, and personal growth, and create awareness while also contributing to the overall development of their students.

## 5.3. Mechanisms of Music Education's Impact on Preservice Teachers' Learning Abilities

The learning abilities of preservice teachers are significantly enhanced by music education. Including knowledge of music theory, performing methods, and music history, music education can aid preservice teachers in developing their musical literacy and proficiency. A deeper comprehension of music and mastery of musical expression techniques can be gained via this instruction, which will enhance preservice teachers' knowledge of the subject and their capacity to instruct music education. According to research, preservice teachers can enhance their capacity to teach music by receiving training in music performance abilities during their study of music education courses (Yu Yanhong, 2018). This will help them better understand and perceive music.

In order to change and improve preservice teachers' educational and teaching mindsets, music education can help them to enhance their aesthetic sense and creative thinking. Preservice teachers' understanding of the relationships between various musical genres and the development of their capacity to appreciate and assess musical works can both be facilitated by music education. Additionally, through music creation, music education helps improve the creativity of preservice instructors. The aesthetic and creative skills of preservice teachers can be enhanced by music instruction, which can lead to higher education and improved teaching practises (Wang, 2020).

Music education can enhance preservice teachers' self-

reflection and improvement by developing self-management skills. Preservice teachers need to self-manage to better plan and implement their educational and teaching work. Music education can provide opportunities for preservice teachers to practice self-management in music composition and performance to enhance their self-management skills. Music education can improve preservice teachers' self-management skills through music performance, thus helping them better plan and implement their educational and teaching work (Han, 2019).

## 6. Conclusion

The mechanisms through which music education influences the learning capacity of preservice teachers include improving musical literacy and skills, developing aesthetic and creative abilities, and developing self-management skills. The implementation of these mechanisms can be achieved through music education and promotes the learning capacity of preservice teachers. Music education contributes to developing preservice teachers' learning abilities, particularly their pedagogical and creative abilities. Enhancing these competencies can effectively contribute to the quality and efficiency of preservice teachers' teaching. However, there are still some things that could be improved in the current research on the mechanism of music education's influence on preservice teachers' learning ability. The scope of subjects in the study sample is narrow, the generalisability of the research findings needs to be further explored, and the potential factors that may exist in the research process must be considered.

Therefore, this paper suggests that subsequent studies can expand the range of subjects in the study sample to verify the generalizability of the findings further, explore the deeper factors of the influence mechanism of music education on preservice teachers' learning ability and consider them; and further explore the influence mechanism of music education on preservice teachers' learning ability in order to better promote the teaching quality and efficiency of preservice teachers.

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