

The Gap between What You Think You Know and What You Know: A Study on Early Childhood Pre-Service Teachers' Self-Perceptions and Actual Understandings of Musical Knowledge

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Abstract

The purpose of this study is to compare early childhood pre-service teachers' self-perceptions with their actual understandings of musical knowledge. 121 pre-service teachers in Korea participated in the study after taking a music education course. They completed a questionnaire that set out to measure their self-perceptions and actual understandings of musical knowledge. The results showed significant differences between pre-service teachers' perceived knowledge and their actual level of understanding. The gap between self-perceptions and actual level of understandings of musical knowledge was not significantly different among the groups of participants with different periods of musical training except for timbre and dynamics. The results of this study were discussed in terms of what early childhood pre-service teachers still need, and how teacher education programs should prepare the teachers equipped with necessary knowledge in order for them to provide rich musical experiences for young children.

Keywords : musical knowledge, pre-service teachers, self-perception

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Introduction

It is well known that music is important in children's lives and that music and early childhood education have a very close relationship (Levinowitz, 1999; Levitin, 2006). Children's musical growth during the early years has received special attention in many research studies. For example, several studies document the benefits of music to children's development in cognitive/academic abilities (Bilhartz, Bruhn, & Olson, 2000; Costa-Giomi, 1999), spatial-temporal reasoning skills (Cmceec, Wilson, & Prior, 2006; Graziano, Peterson, & Shaw, 1999; Gromko, & Poorman, 1998; Husain, Thompson, & Schellenberg, 2002), and language acquisition (Beaton, 1995; Douglas & Willatts, 1994). It is believed that most children are born with musical abilities, enabling them to make and respond to music (Lamont, 2001).

However, the musical ability that children were born with cannot develop without a supportive environment and education. Moreover, individual differences in musical ability are influenced by children's musical experiences and how they are taught (Gardner, 1983; Peery & Peery, 1986). Recently, after reviewing various research literature, Hallam (2010) concluded that "an enjoyable and rewarding experience "(p. 267) is crucial in order for music to have a positive effect on development, implying the significance of the quality of music education. In early childhood education, it is recommended to include both unstructured and structured classroom activities to integrate music into the curriculum throughout the day (Gordon, 2013; MENC, 1994). In addition, early childhood teachers should provide high quality musical environments and interact with children to encourage their musical potential.

Scholars of early childhood music education have suggested early childhood teachers' attitudes towards music and their musical content knowledge as the important qualifications of them to teach music. For example, Lee and Kim (1984) emphasized early childhood teachers' attitude toward the importance of music for children, musical skills, and musical knowledge. Kim, Eom, and Lee (2007) also stressed early childhood teachers' attitude toward musical enjoyment, and eagerness and effort to learn and integrate musical knowledge. In an early childhood curriculum, musical knowledge is composed of three types of knowledge: musical content knowledge, pedagogical content knowledge of music, and curricular knowledge (Kim, 2004). Content knowledge includes musical concepts such as timbre, beat,

meter, rhythm, dynamics, tempo, pitch, melody, and harmony. Pedagogical content knowledge requires early childhood teachers' actual understandings of musical knowledge because it deals with how to teach those concepts in developmentally appropriate ways. In other words, early childhood teachers should know how to provide children musical activities or other learning experiences to help children understand musical knowledge. For example, early childhood teachers can design and provide music activities for the music area so that children can learn musical concepts through play during free play time (Kim, 2013b). The National Association for Music Education advocates providing musical experiences such as singing, playing instruments, listening to music, creating music, and moving to music for young children (MENC, 1994). In addition to providing musical experiences, it is also important for teachers to have curricular knowledge about music. Musical curricular knowledge explains how content and pedagogical content knowledge are integrated into an early childhood curriculum throughout the day by providing a musical environment, planning musical experiences, and providing opportunities for children to practice (Kim, 2013a).

All three types of musical knowledge (musical content, pedagogical content, and curricular knowledge) are necessary for music teaching in an early childhood education setting. Among those, musical content knowledge becomes the scaffolding because one cannot teach past his or her limited subject knowledge. When teachers have a good understanding of the knowledge, they can integrate this appropriately into the curriculum and help children learn and develop understandings about musical knowledge (Cohen, 1990).

Although this musical knowledge is seen to be important for early childhood teachers, the results of previous studies show that early childhood teachers often lack enough musical content knowledge to adequately provide developmentally appropriate activities. According to these studies, this is because many early childhood teachers enter their education programs without enough subject knowledge (Byo, 1999; Kim, 2004; Kim & Lee, 2009; Sim, Yi, Yim, Park, Heo, & Park, 2003). Early childhood teachers' lack of musical knowledge might be influenced by a range of factors, including their individual preferences for music, previous experiences with music (e.g. instrumental or vocal lesson), and family environment that supports their musical growth. Lenz (1978) reported that young children who came from homes with a rich musical environment such as listening to classical music at home, having older siblings involved in music, and so forth performed better than the ones who did not. In a

study about the relationship between children's listening ability and their musical environment at home (e.g. physical environment, musical training taken in addition to the school music program), An (2003) concluded that children who have stronger preferences for music or musical instrument learning showed a higher level of competence in music listening ability. Yoon (2010) also argued that musical achievement of elementary school-aged children is influenced by their interest in music, and types and period of musical education.

Early childhood teachers' lack of content knowledge influences their confidence in teaching and integrating music (Kim & Choy, 2005, 2008). In Kim and Choy's studies, pre-service teachers were not confident in integrating music even though they had positive attitudes toward incorporating music before taking a music education course. Upon completion of the course, the pre-service teachers' self-perceptions on their musical knowledge improved significantly. Confidence in incorporating musical concepts also improved significantly at the end of the course. Therefore, gaining knowledge may help early childhood pre-service teachers to increase their confidence in teaching music. However, according to Kim and Lee (2009), a significant number of pre-service teachers had lower levels of confidence when compared to their musical knowledge. It seems that pre-service teachers not only feel as though they can't teach because they don't know musical knowledge, but they might also feel as though they can't teach even though they do know musical knowledge. If early childhood pre-service teachers are experiencing this discordance, it is worth finding out how it exists in pre-service teachers' perceptions about teaching music in early childhood.

In precedent studies about pre-service teachers' musical knowledge, self-rating instruments were used to measure the level of teachers' musical knowledge by asking them how they perceive their knowledge level, not by assessing their actual understanding. However, what knowledge pre-service teachers think they have might not necessarily match with what they actually know how to teach. What matters in teaching children is not just related to subject content knowledge but also pedagogical content knowledge. According to Kim (2013a), pedagogical content knowledge includes three phases to teach music in early childhood education: a) understanding children's developmental levels and learning styles, b) transferring content knowledge into learner-friendly knowledge, and c) planning and developing activities through which children can learn the knowledge. Since teachers'

pedagogical content knowledge impacts classroom practice and influences children's learning (Jones & Moreland, 2005; Rovegno, 1992), it is useful to investigate if early childhood pre-service teachers have pedagogical content knowledge that shows their actual understandings of content knowledge. Moreover, in examining pre-service teachers' pedagogical content knowledge, it is important to pay particular attention to see if there exists any discrepancy between 'what they think they know' and 'what they know.'

The purpose of this study is to compare early childhood pre-service teachers' self-perceptions with their actual understandings of musical knowledge. The research questions of this study are:

1. What are pre-service teachers' self-perceptions and actual level of understandings of musical knowledge? How are they different?
2. How are pre-service teachers' self-perceptions and actual level of understandings of musical knowledge different according to their prior musical experience such as musical instrument training?

Methods

Participants

One hundred and twenty one pre-service teachers were drawn from one 4-year university and one 3-year college in Seoul, Korea. In Korea, early childhood teacher education programs are mostly offered in 3 or 4-year colleges/universities. Thus, we purposefully selected one of each type, taking into account their representativeness and the music education course they were offering. The participants took a music education course in their early childhood undergraduate program and filled out a questionnaire at the end of the semester. The average age of the pre-service teachers who took part in the study was 19.93 (SD=2.27), and the average of their experiences in learning to play musical instruments was 4.01 year (SD=3.70).

Table 1. *General Information of the Subjects of the Study*

	Categories	N(%)	Total
Age	19 or younger	77(63.6)	121(100%)
	20 - 22	29(24.0)	
	23 or older	15(12.4)	
Attending University	4 year university	60(49.6)	121(100%)
	3 year college	61(50.4)	
Experience in learning musical instruments	None	23(19.0)	121(100%)
	Less than 5 years	49(40.5)	
	5 years or more	49(40.5)	
Degree of enjoying music	Very much	38(31.4)	121(100%)
	Somewhat	56(46.3)	
	Not much	27(22.3)	

Data Collection and Analysis

The questionnaire was composed of three parts: a) general information, b) self- perceptions on musical knowledge, and c) actual understandings of musical knowledge

a) General information

The first part of the questionnaire asked general information about the participants' age, education, experience in playing musical instruments, and how much they enjoy music.

b) Self- perceptions on musical knowledge

The second part of the questionnaire examined pre-service teachers' self-perceptions of musical knowledge. This was measured by asking participants how much they think they know about eight musical concepts – timbre, meter, rhythm, tempo, dynamics, pitch, melody, and harmony (See Table 2). The same instrument with a five-point Likert scale (1- not know to 5- sufficiently know) of previous studies (Kim & Choy, 2005; Kim & Lee, 2009) were used for this part. The internal consistency reliability (Cronbach's alpha) of this part of the questionnaire tested in the study was 0.94.

Table 2. *Definitions of Musical Knowledge (Kim, 2013)*

Musical knowledge (concepts)	Definition
Timbre	The quality of sound that distinguishes one musical instrument from another
Meter	Musical time, grouping of beats
Rhythm	The variation of long and short sounds in music
Tempo	Speed of musical piece
Dynamics	The degree of loudness/quietness of sound in music
Pitch	Highness or lowness of sound
Melody	Coherent succession of pitch and rhythm
Harmony	Combination of two or more pitches sounded simultaneously

c) Actual understandings of musical knowledge

For the third part of the questionnaire, an instrument that was developed to assess early childhood teachers' actual understandings of musical knowledge by Kim, Lee, Kwon, & Park (2011) was used. Early childhood education is a unique field where musical content knowledge is not directly taught but integrated into a whole curriculum, accompanied by play-based activities. In other words, it would be hard for the teachers to provide appropriate experiences to the children if they just know the musical concepts but do not know how to transfer the knowledge into various activities in an early childhood curriculum. The instrument included 25 scenarios of musical activities, which can be observed in early childhood education settings. It measures participants' responses on their actual understandings of musical knowledge. The participants were asked to find one or more musical concepts embedded in each activity. Each musical concept is included in 5 different scenarios. Therefore, the responses on actual understandings of musical knowledge can be measured 0 to 5 for each concept, and 0 to 40 for the total of the eight concepts. The developers of this instrument reported its content validity proven by three music education specialists, each having expertise in music education for young children, and .86 of test-retest reliability.

Table 3. *A Sample of the Scenarios to Examine Actual Understandings of Musical Knowledge*

Musical knowledge (concepts)	Example of scenario
Timbre	Ms. Kim introduces a triangle and a woodblock to kids and has them listen to the sound of the two instruments, and asks. "How do they sound differently?" and a child answers, "The woodblock just sounds 'tak tak' and the triangle rings 'ting ting'."
Meter	Ms. Smith and kids sing "twinkle twinkle little star" tapping their laps and clapping their hands alternately. After finishing the song, she asks "Shall we sing 'Birthday song' now?" and watches how kids tap their laps and clap their hands.
Rhythm	Tom and Jerry have a conversation over a drum. "Hey, can you do this?" Tom says tapping the drum with his hands 'bang, bang, bang, bang' and Jerry repeats after Tom. Tom taps the drum 'bang, bang-bang, bang, bang' and tells Jerry to try it, and Jerry does it and then taps the drum 'bang-bang, bang- bang, bang, bang' saying "I can do this as well."
Tempo	Ms. Lee has kids sing "Little star" with a metronome on. At first, she puts the pendulum at lower part and moves it up at the second singing.
Dynamics	Ms. Gupta plays Haydn's "Surprise symphony" to kids in class. When kids are surprised at the startling part of the music with a big sound, Ms. Gupta asks the kids "Why are you surprised?"
Pitch	Amy is tapping glasses with different amount of water and compares the difference of the sounds.
Melody	Sunny makes a musical note in an art table. She finds color stickers on the keys of a xylophone and arranges color stickers as she likes. She plays the xylophone following the sequence of color stickers.
Harmony	In a music appreciation activity, Ms. Roberts plays a solo version and a chorus version of Gounod's "Ave Maria" and has conversation with kids about the difference between the solo version and the chorus version.

For the data analysis, frequencies and percentages were calculated to describe general information of the participants of this study. Averages and standard deviations of the participants' self-perceptions and actual understandings of musical knowledge were calculated. Then, paired *t*-test and ANOVA were used to compare their self-perceptions with actual understandings of musical knowledge.

Results

The results of this study showed that there was a discrepancy between pre-service teachers' self-perceptions and actual understandings of musical knowledge. As seen in Table 4, there were significant differences.

Table 4. *Difference between Self-Perceptions and Actual Understandings in the Musical Knowledge (N=121)*

Musical knowledge (concepts)	Self-Perception M(SD)	Actual understanding M(SD)	<i>t</i>
Timbre	4.59(.60)	4.03(1.12)	5.57 ***
Meter	4.34(.75)	3.36(1.07)	8.13 ***
Rhythm	4.20(.76)	3.60(1.39)	4.33 ***
Tempo	4.64(.55)	2.71(1.05)	19.36 ***
Dynamics	4.61(.61)	3.91(.94)	7.02 ***
Pitch	4.66(.51)	3.98(1.15)	6.38 ***
Melody	4.36(.71)	3.05(1.05)	12.24 ***
Harmony	4.35(.76)	3.93(.94)	3.72 ***
Total	35.73(4.03)	28.58(5.03)	13.05 ***

*** $p < .001$

The level of pre-service teachers' perceived knowledge was significantly higher than that of their actual knowledge in all of the musical concepts. The *t*-test proved significant differences in musical knowledge as a total ($t=13.05$, $p < .001$), and more specifically about timbre ($t=5.57$, $p < .001$), meter ($t=8.13$, $p < .001$), rhythm ($t=4.33$, $p < .001$), tempo ($t=19.36$, $p < .001$), dynamics ($t=7.02$, $p < .001$), pitch ($t=6.38$, $p < .001$), melody ($t=12.24$, $p < .001$), and harmony ($t=3.72$, $p < .001$). The results show that early childhood teachers think they know the musical knowledge even though their actual level of understanding does not reach up to the same level. In other words, pre-service teachers might say that they know certain musical concepts, while they do not know how that musical knowledge can be presented in musical activities.

The second research question was raised to see if the gap between self-perceptions and actual level of understandings of musical knowledge is different according to early childhood

pre-service teachers' prior musical experience such as musical instrument training. To answer this question, the differences between self-perceptions and actual understandings were calculated. Then ANOVA tests were conducted according to the different periods of musical instrument training (none, less than 5 years, and 5 years or more) of the participants. The results of data analysis are shown in table 5.

Table 5. *Difference between Self-Perceptions and Actual Understandings in Musical Knowledge in terms of Pre-Service Teachers' Experience in Instrumental Training (N=121)*

Musical Knowledge (concepts)	Experience in instrumental training M(SD)			F
	None (n=23)	Less than 5 yrs (n=49)	5 yrs or more (n=49)	
Timbre	.61(1.16)	.85(1.08)	.25(1.00)	3.81 *
Meter	.87(1.36)	1.04(1.50)	.98(1.10)	.13
Rhythm	.83(1.50)	.68(1.62)	.42(1.41)	.68
Tempo	.68(1.17)	.96(1.10)	1.00(1.34)	.55
Dynamics	.61(1.20)	1.00(1.14)	.46(.92)	3.16 *
Pitch	.96(1.07)	.72(1.16)	.50(1.19)	1.28
Melody	1.57(1.27)	1.36(1.29)	1.13(.94)	1.22
Harmony	.09(1.28)	.48(1.36)	.52(1.03)	1.08
Total	7.43(5.39)	8.30(6.47)	5.90(5.00)	2.14

* $p < .05$

There was no significant difference among the groups of participants with different periods of musical training in terms of the gap between self-perceptions and actual understandings except timbre and dynamics. In addition, as Figure 1 explains, the early childhood pre-service teachers who had more experiences playing musical instruments showed higher levels in their perceptions and actual understandings of musical knowledge than those who did not have these prior experiences. However, the gap between participants' self-perceptions and actual understandings still existed in most parts, and the gap was not significantly different from the others.

Self-Perception and Actual Understanding

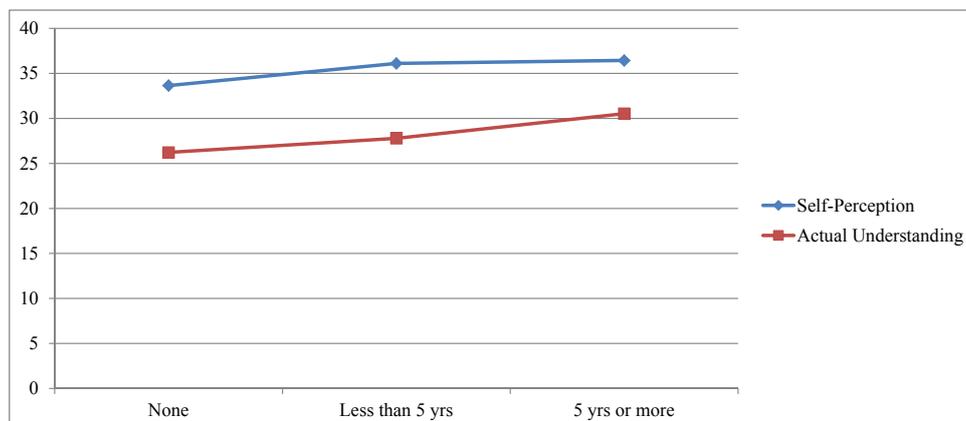


Figure 1. *Tendency of the Gap between Self-Perceptions and Actual Understandings in Musical Knowledge according to Pre-Service Teachers' Experience in Instrumental Training*

Discussion and Educational Implications

Some recent studies about pre-service teachers' knowledge have given attention to early childhood classroom teachers' musical knowledge or their confidence in teaching music (Byo, 1999; Kim & Choy, 2008; Kim & Lee, 2009). These studies have brought up fundamental issues on how teacher education programs can help classroom teachers who are not necessarily musicians and lack confidence in teaching music to young children. For example, Kim and Choy (2008) suggested that teacher educators should provide musical knowledge to pre-service teachers to help them gain more confidence.

Classroom teachers' lack of confidence has been interpreted in terms of their lack of sufficient subject knowledge. This is related to the idea that a person cannot teach what they do not know. Interestingly, Kim and Choy's study (2008) about pre-service teachers' musical knowledge and teaching efficacy showed that pre-service teachers' confidence increased as their knowledge grew. Therefore, as Kim and Choy suggested, a teacher education program should help classroom teachers through providing appropriate musical knowledge. However, as shown in Kim and Lee's study (2009), Korean pre-service teachers' confidence did not necessarily match up to the level of their perceived knowledge as if classroom teachers say that they cannot teach even though they have the musical knowledge. The discrepancy

between their confidence and perceived knowledge was explained in terms of the cultural aspect. In Korean culture, people tend to respond that they cannot do well even when they have more abilities than what they say because it is seen as a virtue.

However, the current study would give a new interpretation to the previous studies such as Kim and Choy (2008) and Kim and Lee (2009). In other words, the pre-service teachers in the previous studies might have been less confident in teaching than in perceiving the knowledge because their level of actual understanding was lower than that of their perceived knowledge. The previous studies measured pre-service teachers' musical knowledge only by asking them how much they think they know musical concepts. Therefore, it was possible for the early childhood pre-service teachers say 'yes (agree or strongly agree)' even when they do not know how to make the musical concepts embedded in musical activities. As explained above, since the way of presenting musical knowledge to young children is unique in an early childhood educational setting, the pre-service teachers would not think that they are confident in teaching the musical content knowledge if they do not understand how musical knowledge could be embedded in various activities of early childhood education.

The results of the current study confirm what early childhood pre-service teachers still need, and how teacher education programs should prepare teachers equipped with necessary knowledge in order for them to provide rich musical experiences for young children. First, what music education provides to early childhood pre-service teachers should include more than musical knowledge. This study showed a gap between content knowledge and actual understanding of the knowledge. Actual understanding of the musical knowledge is lined up with pedagogical content knowledge because pedagogical content knowledge explains how musical knowledge can be taught in the early childhood curriculum. Therefore, musical knowledge will not automatically support early childhood teachers' pedagogical knowledge of music in an early childhood curriculum even though pre-service teachers' confidence can be increased with gaining knowledge as Kim and Choy (2005) suggested. This might also explain why pre-service teachers who had previous musical experiences showed the gap as well, even though they had better knowledge and actual understanding in music. Early childhood teachers should be able to transfer the musical content knowledge into curriculum so that the children can learn musical knowledge throughout the day. Some of this might occur in different periods of time such as free play or group activities, and in developmentally

appropriate activities through singing, moving to music, creating, playing instruments, and listening to music.

Second, pedagogical content knowledge and pedagogy should not be confused. Many teacher education programs for early childhood classroom teachers seem to focus more on musical activities such as singing and playing instruments than on teaching and practicing the three types of musical knowledge. According to Yoon (2002), music education courses of early childhood teacher education programs in Korea mainly deal with how to teach new songs to young children, focusing on the lyrics, rather than musical knowledge. These are also common for in-service teacher education programs because classroom teachers often identify the difficulty of the lack of ideas for music activities in early childhood education practice, and request more applicable programs (Lee, 2009). However, providing different samples of musical activities are different from teaching pedagogical content knowledge. Although early childhood teachers can sing children's songs and play musical instruments, they do not know what they are doing it for if they do not understand musical knowledge.

Early childhood educators often quote the phrase "Give a man a fish, he'll eat for a day; teach him how to fish and he'll eat for lifetime" to explain what an education should be like. This phrase is also applicable to teacher education. Instead of giving pre-service teachers ready-made activities, teacher educators should teach students how to integrate musical knowledge into activities and curriculum. Teacher educators often misinterpret 'how to fish' by providing a series of musical activities for students to experience, which is more like asking students to hold and pull the fishing rod. If pre-service teachers do not understand how musical activities embed musical knowledge and are integrated in the context of an early childhood education, the gap will not be filled. Then, after using up samples of musical activities in their classes, the in-service teachers might simply request for more activities in a rod so that they can just pull it again.

The purpose of this questionnaire was to first collect information about early childhood pre-service teachers' self-perceptions and their actual understandings of musical content knowledge. By comparing the participants' responses, a gap was found between what pre-service teachers think they know and what they actually know. The gap can be filled when the teachers have a sufficient understanding about musical knowledge in early childhood education. Teacher education on musical curriculum influences young children's responses to

music (Nichols & Honig, 1995). Young children can respond to music differently depending on how their teachers were educated. Therefore, teacher education programs should provide practical experiences for early childhood pre-service teachers, so they can get actual understandings of musical knowledge to provide musical curriculum for young children.

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