Using Android-based applications to support elementary school teachers to teach songs

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Abstract. Elementary school teachers in Indonesia have an obligation to teach various subjects, including teaching songs in the field of music. However, the majority of teachers lack the strategies to teach songs to the students, even many teachers do not dare to teach songs to the students. This study aims to increase the ability and courage of elementary school teachers to teach songs to the students. The research method is carried out in the following stages: (1) exploring Android-based applications for vocal learning; (2) choosing and studying the application for vocal learning; (3) learn songs via MP3 audio; (4) simulations for teaching vocals; and (5) evaluation of teaching vocals. Research subjects were teachers in Sumedang district who volunteered to attend music teacher training. Subjects numbered 45 people, a combination of female and male teachers from 26 sub-districts in Sumedang district, West Java province, Indonesia. The results showed that all teachers who attended the training were brave to teach songs through the use of MP3 audio and Scorebooks (equipped with the number of notated and solmization). It can be concluded, that the ability and bravery of the teachers teach songs increased through the provision of digital technologies and comprehensive teaching materials.

1. Introduction
Elementary school teachers in Indonesia needs to be improved in their ability and bravery to teach songs. Their low bravery is caused by their lack of musical skills, including singing. Therefore, many teachers ignore music or vocal learning in elementary school. Meanwhile, the art education curriculum in elementary schools in Indonesia requires teachers to teach music and vocals. That is, if the teacher continues to ignore art learning, then the aim of art education will not be achieved, both within the scope of the national curriculum and global scope as confirmed by UNESCO \cite{1}. Thus, the basic elements needed by students are like getting aesthetic experience \cite{2,3,4}, can be ignored.

One way to solve this problem is to provide structured training for elementary school teachers. Increasing the skills of senior teachers to be able to sing with good control pitches or play musical instruments is clearly difficult. Therefore, training can be a good strategy. The material needs to be given to the teacher, not how their skills are improved in the musical aspect, but rather how the teacher is equipped with media that can be used easily to teach students.

Through training, the results of previous studies reported that most students thought that more time should be consumed with training, although they acclaimed its superiority \cite{4}. Seddon and Biasutti \cite{5} reported the results of their research that exposed developments in participant insights of their own musicality when likened with ‘other performers’ and relations between insights of their own musicality
and previous musical involvement. Dogani [6] also reported that the results of his reflections showed policy matters touching the schooling of music in preschool backgrounds as well as the method training and planned chances can improve scholars' own creative musical involvements and lastly touch their schooling approach in relation to musical originality and schooling music in universal. Different from previous research, this study depicts how the teacher's ability and teacher's bravery can improve through music teaching training programs for elementary school teachers.

2. Methods
This research is carried out by giving treatment through the following stages: (1) exploring Android-based applications for vocal learning; (2) choosing and studying the application for vocal learning; (3) learn songs via MP3 audio; (4) simulations for teaching vocals; and (5) evaluation of teaching vocals. Research subjects were teachers in Sumedang district who volunteered to attend music teacher training. Subjects numbered 45 people, a combination of female and male teachers from 26 sub-districts in Sumedang district, West Java province, Indonesia.

3. Results and discussion

3.1. Exploring Android-based applications for vocal learning
At this stage, we explain the strategy of teaching music based on the character of music teachers in elementary school. In Indonesia, basically, there are several types of teachers: teachers who can sing, teachers who can play musical instruments, and teachers who cannot sing and play musical instruments. Various basic theories of music were explained to strengthen teacher's knowledge, such as scale, melody, interval, tempo, rhythmic, and expression matters [7], examining song collection [8], and musical vocal skills [9, 10]. The development of music with technology and its various terms [11] is also explained so that the teacher's insight also adapts to the current conditions.

The teacher was introduced to various music applications on the playstore via smartphone. In the playstore there are many free applications that can be used for learning music and vocals. All teachers are focused on exploring applications to help with vocal learning, such as piano music instruments. This exploration activity is carried out by entering keywords, such as "piano," and the results can be seen in Figure 1 below.

![Figure 1. Results of exploration of music applications.](image)

3.2. Choosing and studying the application for vocal learning
After all the teachers explore various types of musical instrument applications, there are two applications that are needed by them, namely applications to guide song melodies, and applications to practice the stability of the tempo in singing. The two applications chosen to help solve both problems are "Perfect Piano" and "Metronome Beats."
3.2.1. Understanding the Perfect Piano application. This application is very useful for helping teachers in presenting song melodies. Teachers do not need to sing directly, because their voices can be represented through the Perfect Piano application. This is better than the teacher singing directly with the tonic pitch is not good, because it can adversely affect the vocal audition process of students [12]. As shown in Figure 2, the Piano Perfect application resembles a real piano, and is simply sounded by touching through the mobile phone screen. This application also provides tones in all octaves that are on the piano, but to reach all octaves it must be done by sliding it to the right (high octave) and to the left (low octave). Various sounds are provided in this application to be used according to the needs or tastes of the users (see Figure 3). Various types of instruments can be added to the paid version of the application.

![Figure 2. Display of the Piano Perfect application.](image)

3.2.2. Understanding the Metronome Beats application. All teachers agreed that students had difficulty singing with a stable tempo. Meanwhile, the teacher also has difficulty to practice the stability of the tempo in singing. Therefore, the teacher was given a solution to use the Metronome Beats application. When the application has been installed, it turns out that almost all the teachers do not understand the terms relating to the tempo, such as BPM (Beat per Minute) or Andante. Therefore, they are given an explanation accompanied by direct practice to operate the Metronome Beats application, such as adjusting the number of BPM and beats per bar (increase and decrease tempo). This application is equipped with clicks per beat so it helps the teacher to feel the tempo of each beat.

![Figure 3. Choice of musical instruments in the Perfect Piano application.](image)
3.3. Learn songs via MP3 audio

At this stage, the teacher appreciates every song that is played. They are given the task of analyzing melody, rhythm, and tempo in each song. The rhythm of the song is made quite varied, such as 2/4, 3/4, and 4/4. Tempo songs also vary, from 65 bpm to 132 bpm. They also analyzed the meanings of each song’s lyrics, which were made into nine national character themes. The teacher sang songs one by one from the results of appreciating. Teachers are not required to sing songs exactly as the examples are played, because clearly their ability to sing the majority is not good. However, the most important thing here is that they can find out the melody of the song, feel the rhythm and tempo of the song.

All teachers were given song material in the form of whole songs and karaoke. They move all song material into a mobile phone, with the aim that the song is easily played during class learning, and can be connected to the loudspeaker. The application used to play MP3 audio is the “Jet Audio” application (see Figure 5). Through this application, songs can be easily classified, and the sound effects can be adjusted through an equalizer menu (see Figure 6).
3.4. Simulations for teaching vocals

Actual instructive simulations can provide viable replacements to the true experiences by carefully duplicating the real world and providing learning experiences situated within reliable tasks [13-15]. The teacher implements the results of the training by directly teaching song materials obtained through training. Each teacher has an obligation to teach at least one song to elementary school students in their institution. The teacher does not teach songs directly through their voices, but through MP3 audio media that is equipped with karaoke and the Scorebook. The following Figure 7 shows one of the trainee teachers teaching songs to the students.

![Figure 6. Equalizer menu in the Jet Audio application.](image)

![Figure 7. The teacher performs simulations teaching songs to the students.](image)

3.5. Evaluation of teaching vocals

The teacher is assigned to report the results of the song teaching simulation at their respective institutions. As a result, all teachers carry out simulations and have the confidence to teach songs with the help of MP3 audio, song textbooks, and other digital equipment. Some teachers sent messages about the results of teaching through WhatsApp. They report that students are enthusiastic about singing. The students took out their expressions, there were even students who were crying because of the melancholy melody and the lyrics that gave moral messages. Their reports basically indicate that they have the bravery to teach in an easier way. This result is in line with previous research, which proves that training can improve teachers' ability to teach music [4, 6, 11, 16]. The results of this study are also in line with other studies that make teachers become more professional and confident in their work because they are assisted by digital technology [17].
4. Conclusion
Through this research, it can be concluded that the ability and bravery of the teachers teach songs increased well, even confidence increased. Therefore, one solution to learning music or vocals went well, is to equip teachers with technology that they can apply directly to students, without demanding higher skills to apply them.

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