Learning Tonal System Using Black and White *Angklung*

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Abstract—**Learn to teach *angklung* is not as simple as learn to play *angklung*. According to the participant of *Angklung* workshop for Elementary School teacher, understanding the relation between the numerical system for identification the *angklung* pitch, and numerical music notation system is difficult. This article is an action plan to help the elementary school teacher understand the tonal system using black and white *angklung*. Black and white *angklung* is a visual code to identify pitch as an analogy of piano.**

Keywords: tonality, scale pattern, numerical system, numerical notation

I. INTRODUCTION

Angklung is one of the bamboos musical instrument that spreads across various regions in Indonesia such as Java, Sumatra, Madura, Kalimantan and Bali [1,2]. *Angklung* in various regions of Indonesia tend to be pentatonic but highly variable. For an example, *Angklung Dogdog Lojor* in the Ciptarasa-Sukabumi area only have three tones (the tones are close to gis, c and cis) although it is used to accompany a song that near to a salendro's [3]. Meanwhile Kunst reports that *angklung* from Banyuwangi - East Java and *angklung* from Tasikmalaya - West Java are inclined to Salendro's barrel but used a different pitch [4].

The existence of *angklung* in community was subsided because banned by the Dutch government. *Angklung* began to developed since 1938 after Daeng Soetigna made a chromatic-pitched *angklung* on a diatonic scale. This *angklung* was originally used by Daeng to build student collaboration in scouting activities. Over time this *angklung* also used as an educational medium in schools and as an art show in the community.

In 16th November 2010, Indonesian *angklung* was recognized as intangible cultural heritage of humanity by Unesco [5,6]. Playing *Angklung* to promotes the values of teamwork, mutual respect and social harmony because traditionally *angklung* is played by several people as an ensemble. It's also promote the values of cooperation, discipline and mutual respect that are at its core. For these reason, it is important to integrate *angklung* in formal education *Angklung* can be used as a medium for character

building. There is no special technique for playing the instrument because it is just shaken [7,8].

Although *angklung* is famous and easy to play, but it is not common in School yet. The concern to socialize *angklung* in school through training of the teacher is still needed. These article is part of an action plan in our research process to improve the elementary school teachers in teaching *angklung*

II. METHOD

This paper is a part of the second cycle of action research. The first cycle already implemented on 18th and 19th July 2018. The training was attended by 11 elementary school teachers from two districts in Bandung. In 2019 we had an opportunity to provide *angklung* training to improve the abilities of elementary school teachers in Bandung city. There were 25 trainees invited by Bandung Education Office, including 11 teachers who had joined the previous training. Therefore, the second cycle are planned with hope to increase the quality of elementary school teachers in practicing *angklung* at schools.

This action research is referring to McKernen and Lewin's model which basically consists of six steps in each cycle [9,10]. The six steps are including: (a) Defining the problem; (b) needs assessment; (c) action plan / idea; (d) implementation; (e) observation for evaluation; and (f) reflection and discussion to make decisions. This paper only discusses the first three steps in action research: defining the problem, need assessment and action plan.

III. FINDINGS AND DISCUSSION

A. Defining the Problem

Preparing the elementary school teacher to be competent in teaching *angklung* is not as easy as shaken the *angklung*. Most of the elementary school has a problem to learn *angklung* by notation [8]. It is happened because there are overlapping numerical sign and complexity in symbolic meaning (figure 1). Numerical sign is used both as a sign to storage *angklung* in *angklung* stand and also as a symbol in numerical notation. Some alphabet as a sign for musical sound commonly used in western notation also used in storage system. As a result, the

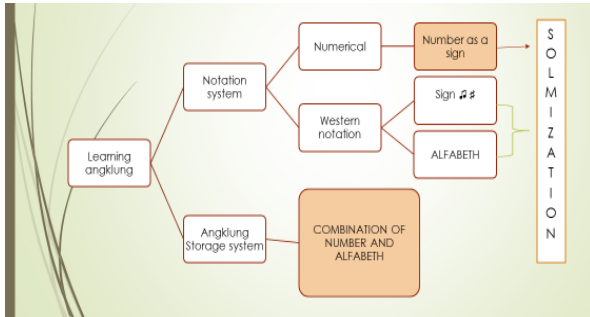elementary teacher without musical knowledge background confused about it.

Fig. 1.   The complexity of simbol and sign in learning *angklung*.

Based on *angklung* training process from 2018, were obtained data that teachers are more familiar with numerical notation than block notation (common notation). They are used to singing the number 1 notation as do, 2 as re, 3 as mi, 4 as fa, 5 as sol, 6 as la and 7 as si. When music notation was introduced using staves (staff) and marker c, d, e, f, g, a, and b the teachers are still understood. This happened because they already understood the use of solmization in numerical notation. When learning the block notation, they understand the c notes as do, d as re, e as mi, f as fa, g as sol, an as la and b as si. But when the training instructor says let's try playing the song in the basic tone of D = do, the teachers start to get confused about why D became a do, isn't C were a do.

When the teachers are confused the instructor explains that Pak Daeng's *angklung* using a tonal system. In the tonal system there is a center of tone (tonality), which can move around. For an example, C major tonality means the C note as the center of the note from the series of notes on the major scale, while the D major tonality means the D note as the center of the note. Major scale is an intervals pattern between tones with a distance of the major seconds, major seconds, minor seconds, major seconds, major seconds, major seconds, and minor seconds [11,12].

After gotten an explanation some of the teachers seemed to understand. However, based on the evaluation result submitted by participants at the end of the training, they stated that they were still confused with the tonal system. Their confusion also appears when they have to choose *angklung* which have markers in form of numbers and letters C, D, E, F, G, A, B. This was reflected when they were asked to choose their own *angklung* to play songs with tonality other than C major. Based on that problems training is needed to help teachers to understand the tonal system in *angklung* instrument.

B. Assessment Needs or Field Inspection

Assessment needs was conducted through a video analysis of the training process and questionnaire. Through video analysis the symptoms of teachers that less enthusiastic to listening about the explanation from speakers related to block notation are obtained. Some participants whispered "ouch dizzy", some others seemed to playing with their phone. Only a few of participants seemed to pay attention at the speaker. When the speaker asked if there were any questions one of the teachers immediately said: "Sir dizzy sir confused, please just

used the numerical notation". Other participants were supported it by saying yes sir it's hard there are "fis, gis ah I'm confused".

Why they were dizzy? The results of team's discussion and reflection found the root of the problems caused by two things. First the approach taken by the trainer pay less attention to adult learning needs The delivery process is executed by lecturing with showing the notation using Sibelius software. The participant has to listen the trainer explanation which tends to use more theoretical approach than pragmatic. It has an implication to the participant motivation, because they hoped to find practical ways to learn and teach *angklung*.

The second problem is related to teachers or participant background. The majority of teachers doesn't had knowledge of the tonal system in common western notation yet. They are more familiar with the numerical notation that represents the difference between the tones with numbers. While in the common western notation they need to understand the tones in two symbols i.e. the location of tone in a staff and the use of letters: c, d, e, f, g, a, and b. The information about numerical symbols, letters, the location of notes on staff, and solmization are complex and requires high-level thinking skills.

To help the teachers to understand the tonal system in *Angklung* music performance, needs more pragmatic approach. Therefore, it's necessary to develop new training strategy.

C. Action Plan

The alternatives approach to improve the participant understanding and competencies is the andragogy approach or adults learning approach. The important figure who put this concept forward in educational world is Knowles who defines andragogy as the science and arts of helping adults learn, as a practical approach towards adult learners [13-15]. Learning for adults should be able to reinforce the concept of adult. Adult learning will be meaningful if it's suitable with their social role [16]. Adults tend to be ready to learn if they believe they needed to know it. Adults tend to learn for practical purposes that oriented to solve on the problem, task and focus of their lives. So it has an implication to the strategy that focus on two learning methods of problem-based learning (PBL) and supplemental instruction (SI).

There were two aspects of adult learning: psychological and sociological, that must be emphasized while design the training program for adult [16]. The important point from psychological aspect is the active subjective involvement of the learner as a whole person. From sociological approach, social element of learning is central. Communities of practice is a crucial learning environment for adult [17]. These two approaches inspired the development of training strategy where teachers should have an opportunity to be involved as an active participant through collaborative experience.

In the action plan, we design the black and white *angklung* program consist of objective, materials, activities, and evaluation. But on this article we omit the evaluation. The program has an objective to help teachers understand the tonal system using black-and-white *angklung* with the indication:

- teacher can choose *angklung* to play music in several tonalities;

- teacher can read and analyze music notation both numerical and common western notation;

- teacher can learn and teach *angklung* each other in groups

- teacher can play *angklung* music in several tonalities together

Black and white are the two colors that used to distinguish natural and chromatic tones. The frame of *angklung* Padaeng is painted with white color for natural tones and black color for chromatic tones, similar with white and black keyboard on piano. These *angklung* is hanging on the bamboo rack in sequence from the low voice to the high voice. This sequence available for identifying the interval between two tones visually (see figure 2). Besides being painted, *angklung* also possible to be marked by black and white hair ribbon.

Fig. 2. Black and white *angklung*.

The training materials are adjusted to participant's prior knowledge and experience. The solmization of diatonic scale is common for the participant. It will be used to integrate the two system of notation – numerical and western common notation. The diatonic tonal system will have delivered through game that engage the active participant to play major and minor scale using *angklung*. We combined the songs that teachers already know with the new song. The songs are written with two notation system (see figure 3).

Fig. 3. Combination of numerical and common Western notation.

Activities are designed into three types. First is learning to play major and minor scale using black and white *angklung*. The second is self-learning in small groups to solve problem gives by the instructor, and the third is collaborative learning for all participant to arrange and play the song that had been learned.

At the first activities all participant will divide into two groups and line up one by one to take the white *angklung* at the hanger. There are two set *angklung* on the hanger, and all participants should take one *angklung* start from c until the octaves or more depend on the number of participants on each group. They will stand facing each other to play c major scale conduct with instructor. First they will play the C major scale and ask to sing it with solmization. It is the way to connect the activities with their prior knowledge. After that they will play scale in several techniques, articulation, and expression. In example legato, staccato, combination of legato and staccato, dynamic motion, contras dynamic, and different contour melodic. All of this material delivered in game between two groups such as imitation, call and respond in different technique or expression. This activity aims to introduce the technique, scale feelings in tonal system, and a sense of togetherness in a community learning practice. All of the participant should participate in this game. These activities will repeat in A minor scale.

After being able to play C major and A minor scale with *angklung*, they were asked to return back the *angklung*'s on the shelf as before. The second step is the analysis of major and minor scales, by identifying the distance between black and white *angklung* on the shelf. The participant is expected to find out the major and natural minor pattern. This pattern is a key concept to solve the problem gives by the trainer. They have to find *angklung*'s that matches with the A major, B major, D major and E major scale on a worksheet (see figure 4). This activity is carried out in small groups.

Fig. 4. Worksheet to identify scale.

To make sure that the answer is true, each group was asked to take *angklung*s and ring it. From this activity the participant is expected to have competence in choosing and playing *angklung* in several major or minor scales.

The third stage is implementing the knowledge to select which *angklung* should be taken for playing a song "Sepatuku" created by Tris Palupiningtyas. Each group played this song by

reading the notation which is write in different tonality. The discussion in group starts by analyzing the song rhythm in a mnemonic way, and play the notes slowly with *angklung*. They must master the song in small group for half an hour, and after that perform it in front of the class. Next challenge is play the common song for the participant "Terimakasihku" created by Sri Widodo.

The last activity is collaborative work to arrange the song that has been learned. They were given time to choose accompaniment *angklung* that match the song, and create a rhythm pattern to build the nuance of the song. They also given time to arrange the movement and position on the stage. Through this activity the participant will get the practical knowledge to arrange and perform music.

IV. CONCLUSION

Problem based learning is implemented in all activities as a strategy to involve the participant actively in learning process. Cooperation between participant in small group is build but competition between groups also happened while each group present their work. Combination of black and white color of *angklung* as a sign, and solmization became a solution to unravel the complexity of sign and symbol in learning *angklung* Padaeng.

ACKNOWLEDGMENT

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