Elementary school science analog sources derived from coastal traditional art: Topeng Endel dance

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Abstract. As a representation of social life, coastal traditional art provides means supporting elementary school students’ analogical thinking, particularly in science learning. Its unique cultural characteristics fit the need of students to find analog of science material. The Topeng Endel dance is one of the arts which serves students many analog sources. This paper discusses result of a study aiming at exploring various science material analogs derived from the Topeng Endel dance. It is a part of a research on culture-based analogical thinking skill of elementary school students. The documentary and literature studies were employed as the method of the study. The result showed that there are at least eight main typical hand movements of the Topeng Endel which represent similarities with the form concept of the muscle motion explained in the science class. This result and its discussion direct a conclusion that performance aspects of the Topeng Endel accommodate elementary school students with science analog sources in thinking analogically.

1. Introduction

A research on elementary school students’ culture-based analogical thinking skill has been carried out. A coastal region, commonly called by the Pesisir, is one of the research areas. This region has its unique characteristics [1] distinguishing it from other culture region types in Java, Banyumas and Negarigun [2, 3], represented by its community, culture and physical condition features [2]. In this study, cultural background characteristics of students’ surrounding area has been explored. The art, a form of the culture [4], is preferred as the focus of the exploration.

The Topeng Endel dance is reported as a typical coastal tradition art from Tegal, a very famous coastal region in Central Java [5-7]. This famous dance delineates Tegal’s community with its some open physical condition of shore land and coastal water areas, and its basic attitude of transparent, brave, like to face challenge and straightforward [3]. These identities are reflected in the dance performance, in terms of its movement. In the same time, the performance shows actions of the dancer’s body parts as one of observable dance’s components [8]. Since the dance is a form of artwork, it has, in fact, a potential role for supporting students’ science learning, particularly in elementary school, that is as the analog sources [9, 10].
In the fifth grade of elementary school class, the muscle motion is studied. This topic can be delivered through the use of analogical thinking process employed by students since its material relates to daily activities surrounding students. It is stated that students’ cultural background affects the use of analogy [11] and its use in science class provides benefit of helping students in taking easier material understanding [12,13]. This paper discusses finding of analog sources provided by the Topeng Endel dance to accommodate analogical thinking of elementary school students.

2. Methods
This qualitative research was designed with the cultural approach. The data consisting mainly of the movement components of the Topeng Endel dance were gathered through documentary study, interview and literature review. The movement, particularly hand movement, was picked as the only dance component will be analysed since it has close relation to the science learning topic: muscle motion. The analysis was carried out through watching the dance performance video, noticing the movements and describing the dance features [8]. Some interviews with the dancers from the Sanggar Cipta Mandiri, Pesalakan, Adiwerna, Kabupaten Tegal and the Sanggar Ayu Lestari, Pedagangan, Dukuh Waru, Kabupaten Tegal were also undertaken to take better understanding of the analysis result.

3. Results and Discussion
In its performance, the Topeng Endel dance consists of several main hand movements, as shown in the Table 1.

| No | Name of the movement | Picture | Hand movement description |
|----|----------------------|---------|--------------------------|
| 1  | Wearing and taking off the mask | ![Picture](image1.png) | Both hands are bent to hold and put the mask on dancer’s face. (After: Indra Maghfiroh, 2016) |
| 2  | The Menthang (left and right hand) | ![Picture](image2.png) | Straight right hand makes an angle of around 45° with the horizontal; left hand is bent, the left forearm is directed to close the dancer’s body (navel), and both palms is upright with the ngrayung position: four fingers are stucked together, the thumb is bent closer to the palm. (After: Indra Maghfiroh, 2016) |
| 3  | The Seblak sampur | ![Picture](image3.png) | From bending position, the (left) hand goes down to catch the sampur dan push it aside. (After: Suwitri, 2016) |
4  The Lonthang

Right hand is bent, the right forearm makes an angle of around 90° with the upper arm, the right palm is bent with the ngrayung position to make an angle of 90° with the forearm. Left hand is elevated and bent so that the left forearm makes an angle of around 90° with the left upper arm. The palm position is the nyempurit: fingers are bent to make half circle

(After: Indra Maghfiroh, 2016)

5  The Ukel seak

The arm is bent so that the fore arm is located beside the ear. The wrist is rotated with the nyempurit palm position.

(After: Indra Maghfiroh, 2016)

6  The Bapang

The (right) arm is bent so that the fore arm makes an angle of around 90° with the upper arm (upward) and the palm position is upright. The same movement for the (left) arm, but the palm is bent to form U position.

(After: Suwitri, 2016)

7  The Miwir sampur

The straight hand handling the sampur, with the ngrayung palm position, is directed downward and makes an angle of around 45° with the body.

(After: Indra Maghfiroh, 2016)

8  The Ulap-ulap

One hand is on the side of the head, slightly above the forehead. The palm is bent toward the floor. All fingers are in the wulan tumanggal or taweng position: straight, but uneven and the index finger is slightly lower than the others.

(After: Indra Maghfiroh, 2016)

The Topeng Endel is a typical traditional dance of Tegal which becomes a special attraction art in that region [14]. As stated by the Topeng Endel dancers, who are teachers at several elementary school in Tegal, currently, this dance is set as one of local compulsory (the mulok) subjects in Tegal area. Because of its characteristical features and existence in elementary school students academic activities, the Topeng Endel dance can be categorized as a traditional artwork which is familiarised by
elementary school students in Tegal. This also shows the work of social function of a traditional dance which is also indicated by those in other country [15-17].

Movement is one of the important observable dance components, ranging from gestures, bends, extensions, twists and turns, which distinguishes one dance with the others [8, 18, 19]. The result of analysis shown in Table 1, reveals that in the Topeng Endel dance performance, one of the movements is represented in its typical hand actions, such as twisting or rotating the wrist and bending of arm and fingers. Several hand actions of twisting or rotating the wrist occur in dance movement of the ukel (seak, seak podo and trap jamang). One of meanings of the ukel term is rotate [20]. In this movement, part of the hand: the wrist, is rotated [20]. Furthermore, the hand actions of bending appear in almost all of dance movements, such as the ulap-ulap, the miwir sampur, the bapang, the lonthang, the menthang, the seblak sampur and wearing and taking off the mask. All of these hand movements show similarity with the form concept of the muscle motion explained in the science class of grade 5. In the learning, it is explained that the hand, as a part of human body, belongs to motion systems which consists of active and passive motion systems. The active system is commonly known as muscle, while the passive one is the bone. The hand is also described as a body part which consists of the upper arm, the forearm, the fingers, the elbow, the wrist and the palm. The two systems of the hand parts work collaboratively to perform a particular hand movement or motion and position, such as bending, elevating, rotating, straight position, and so forth. Because of the similarity between concept of hand movement of the dance and muscle motion topic material, the dance movement can serve as analog sources for students in thinking analogically. It is in line also with the understanding of analog in analogical thinking which is explained as a life experienced thing having similar feature with a particular target concept [21, 22].

From other point of view, the results give an evidence that in Topeng Endel dance performance there are several hand movements which, in fact, match with the need of support for achieving elementary school students’ competence in science learning. As stated in the curriculum of elementary school, the third core competence of knowledge of Science of grade 5 is understanding factual and conceptual knowledge by observing, questioning and trying, based on curiosity about himself, God's creatures and activities, and the objects met at home, school and playground. Furthermore, the basic competence corresponding to this core competence is written as describing the systems of motion and their function in animals and human and how to maintain the health of human motion systems. It is stated also in the syllabus that students are expected to be able to recognize and describe human body and their function, including human motion systems. Based on these competence criteria, students’ surrounding area activity, including dance, is an important consideration for providing sources of learning to support the process of gathering the expectation. In this case, the Topeng Endel dance provides sources of analog in terms of dancer’s hand movements.

4. Conclusion
Muscle motion is a science topic delivered in grade 5 elementary school lesson. Many basic references stated that students’ competence will be achieved through the subject learning relates to daily activities in surrounding area of the students. As one of traditional art activities in Tegal, the Topeng Endel dance contains many typical movements. The analysis of these movements showed, in fact, that the dance has close similar structure with the target concept of muscle motion material, in terms of its performance of hand actions which fit the criteria of analog source. Based on result of analysis, this research concludes that performance aspects of the Topeng Endel accomodate elementary school students with science analog sources in thinking analogically.

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